

CHROMOSOME NUMBERS IN ANGIOSPERMS II

BY

L. O. GAISER

(REPRINT FROM BIBLIOGRAPHIA GENETICA VI)



THE HAGUE
MARTINUS NIJHOFF
1930

CHROMOSOME NUMBERS IN ANGIOSPERMS II

BY

L. O. GAISER

With so large a number of workers in many countries reporting on chromosomal studies of many species and varieties of plants it has become desirable to collect the results of their investigations in a uniform way and at regular intervals.

The present list of chromosome numbers has been prepared to supplement a previous one (GAISER, 1926) with the results of investigations reported between 1925 and the end of the year 1928. In order that it might be an adequate supplement at the present time, all older references previous to 1925 have been included as well as additions and corrections to the first list covering the period 1925 to 1928. It is planned to publish hereafter, annual supplemental lists in *Resumptio Genetica* to keep the results of investigations up to date until such time as their use to workers seems to have expired.

In collecting results so that they will be of most benefit it has seemed important that the investigators should know, as nearly as possible, the exact species or varieties that others have investigated. For this reason the names of varieties have always been listed. Whenever the authority for a species name had been given by a writer it has been included. Though this may not seem necessary in a large percentage of cases because the chromosome number given for a species name with or without the authority is the same, nevertheless, in looking through the list, cases will be found where a species of different authorities shows different numbers.

Following the plan of the previous list, two columns (n and $2n$) have been arranged so that the haploid or diploid chromosome number might be inserted according as the number had been determined

in reduction or somatic divisions or in both. The same method has been followed of indicating univalent, trivalent or tetravalent chromosomes by sub-figures in the haploid column. Wherever other than bivalent chromosomes have been reported, the „n” column includes the number of such as the numerator over the denominator 2 to indicate the approximate haploid number. The species and varieties have been listed in alphabetical order. Wherever species have been arranged in sections by the investigators such arrangement has been followed in the list and foot-notes include references to the classification followed. The arrangement of species under families and orders is according to ENGLER and GILG (1919).

This compilation has been made possible by the use of volumes in many libraries in the United States and Canada. The writer wishes especially to express gratitude to the libraries of the United States Department of Agriculture, Columbia University, the New York Botanical Garden, Toronto University, the Royal Canadian Institute and the Library of Congress for the great help they have given, as well as to other university libraries which have contributed assistance by inter-library loans.

I wish to express my appreciation of Prof. R. A. HARPER's interest and advice on the plan of the undertaking. To Miss ELIZABETH CALKINS I am indebted for very valuable help in the final preparation of the list.

McMaster University,
Toronto, Canada.

DICOTYLEDONEAE

	n	2n	
VERTICILLATAE.			
CASUARINACEAE			
<i>Casuarina equisetifolia</i> FORST			
prol.	12		WETZEL, 1928.
<i>montana</i> LESCHEN			
prol.	12		" "
<i>quadrivalvis</i> ¹⁾ . . .	8-12		JUEL, 1903a.
<i>stricta</i> AIT.	12		WETZEL, 1928
PIPERALES.			
SAURURACEAE			
<i>Houttynia cordata</i> THUNB. . .		52-56	SHIBATA & MIYAKE, 1908.
	ca. 50	100-104	SÖDERBERG, 1927.
<i>Saururus cernuus</i>	10		TÄCKHOLM & SÖDERBERG, 1918
PIPERACEAE			
<i>Piper Betel</i> L. var. <i>hispidula</i> .	16		JOHNSON, 1910.
<i>subpeltatum</i>	12		PALM, 1915.
	20		HÄUSER, 1916.
<i>Peperomia blanda</i> HUMB.,			
BONPL. et KUNTH.	12		HÄUSER, 1916.
<i>hispidula</i> A. DIETR.	12-14		JOHNSON, 1914.
<i>incana</i>	11		ABELE, 1924.
<i>magnoliifolia</i> (JACQ.)			
A. DIETR.	12		HÄUSER, 1916.
<i>pellucida</i>	10-12		BROWN, 1908.
<i>resediflora</i> ANDRÉ	12		HÄUSER, 1916.
<i>sintensii</i>	8		BROWN, 1908.
SALICALES.			
SALICACEAE			
<i>Populus canadensis</i>	4	8	GRAF, 1921.
<i>Eugenei</i>	19 ²⁾		BLACKBURN (1926), 1929.
<i>generosa</i>	19 ²⁾		" " "
<i>serotina</i>	19 ²⁾		" " "

¹⁾ According to ENGLER a. PRANTL, *C. quadrivalvis* LABILL. is synonymous with *C. stricta* AIT.

²⁾ Sex chromosomes were present so that ♀n = 18 + x and ♂n = 18 + x or 18 + y

SALICACEAE (continued)	n	2n	
<i>Populus</i> (continued)			
<i>Populus tremula</i>	4	8	GRAF, 1921.
„ <i>tremula</i> L.	19	38 ¹⁾	BLACKBURN & HARRISON 24
„ <i>tremuloides</i> MICHX.	19 ²⁾		ERLANSOHN & HERMANN, 27.
SALIX			
Section <i>Albae</i>			
<i>Salix alba</i> L.	38		HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 24
Section <i>Phylicifoliae</i>			
<i>Salix Andersonia</i> SM.	57		HARRISON, 1922.
	57+ ¹⁾	100+	BLACKBURN & HARRISON, 4
Section <i>Capreae</i>			
<i>Salix aurita</i> L.	38		HARRISON, 1922; BLACKBURN & HARRISON, 1922.
	38 ¹⁾	76	BLACKBURN & HARRISON, 1922.
„ <i>Caprea</i> L.	19		HARRISON, 1922; BLACKBURN & HARRISON, 1922; MEYER, 1925a.
	19	38	BLACKBURN & HARRISON, 1922.
	38 ²⁾		HARRISON, 1922.
„ <i>cinerea</i> L.	38		HARRISON, 1922; BLACKBURN & HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 1922.
Section <i>Fragiles</i>			
<i>Salix fragilis</i> L.	38 ¹⁾		HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 1922.
Section <i>Purpurea</i>			
<i>Salix purpurea</i> L.	19		HARRISON, 1922.
	19	34-40	BLACKBURN & HARRISON, 1922.
Section <i>Amygdalinae</i>			
<i>Salix triandra</i>	19		HARRISON, 1922.
„ <i>triandra</i> L. (from Bedfordshire)	19	38	BLACKBURN & HARRISON, 1922.
„ <i>triandra</i> L. (from Kew)	22	40+	„ „ „
Section <i>Viminalis</i>			
<i>Salix viminalis</i> L.	19 ¹⁾	38	„ „ „
„ <i>viminalis</i> L. var. <i>yezoensis</i> Schneider	19 ⁴⁾		SINOTO, 1928a.

¹⁾ BLACKBURN & HARRISON (1926) found one lobed chromosome apparently homologous with a smaller chromosome. As a result they concluded that „some evidence exists of heterochromosomes, probably sex-determining in their import.”

²⁾ Eighteen pairs of autosomes and an unequal pair of sex chromosomes were found.

³⁾ While *S. Caprea* is in the main a diploid form, a tetraploid race indistinguishable in the field from the commoner diploid type was found.

⁴⁾ An unequal pair of chromosomes was distinguishable.

SALICACEAE (continued).		n	2n	
SALIX (continued).				
Section (?) ¹⁾				
<i>Salix japonica</i> THUNB.	19 ²⁾		SINOTO, 1928a.	
" <i>leucopithecia</i> KIMURA	19 ²⁾		" "	
" <i>melanostachys</i> MAKINO	19 ²⁾		" "	
" <i>sachalinensis</i> FR. SCHMIDT	19 ²⁾		" "	
MYRICALES.				
MYRICACEAE				
<i>Myrica rubra</i> S. et Z.	8		SUGIURA, 1927.	
JUGLANDALES.				
JUGLANDACEAE				
<i>Juglans californica</i>		34	BABCOCK, given by PAPENOE, 1915.	
" " WATS.		34	BABCOCK, 1915.	
" " var. <i>quercina</i>		34	BABCOCK, given by PAPENOE, 1915; BABCOCK, 1915.	
FAGALES.				
BETULACEAE				
<i>Carpinus betulus</i> L.	8		WETZEL, 1928.	
<i>Ostrya carpinifolia</i> SCOP.	8		" "	
<i>Corylus americana</i>	11		" 1927.	
" <i>americana</i> MILL.	11		" 1928.	
" <i>avellana</i>	11		" 1927.	
" <i>avellana</i> L.	11		" 1928.	
" <i>maxima</i>	11		" 1927.	
" <i>maxima</i> MILL.	11		" 1928.	
" <i>rostrata</i> AIT. var. <i>Mandschuria</i> REGEL	11		" "	
<i>Betula humilis</i> SCHRANK	14		" "	
" <i>nana</i> L.	14		" "	
" <i>pubescens</i>	28		HELMS & JØRGENSEN, 1925.	
" <i>verrucosa</i>	14		" " " 1925.	
" <i>verrucosa</i> × <i>B. pubescens</i>	21		" " " 1925.	
<i>Alnus cordata</i>	14		WETZEL, 1927.	
" <i>cordata</i> (LOIS). DESF.	14		" 1928.	
" <i>glutinosa</i>	14		" 1927.	
" <i>glutinosa</i> GAERTNER var. <i>vulgaris</i>	14		" 1928.	
" <i>incana</i> MOENCH.	14		" "	
" <i>japonica</i>	14		" 1927.	
" <i>japonica</i> SIEB. et ZUCC.	14		" 1928.	

¹⁾ The following 4 species were not classified under sections by SINOTO.

²⁾ An unequal pair of chromosomes was distinguishable.

BETULACEAE (continued).		n	2n	
<i>Alnus</i> (continued)				
<i>Alnus rubra</i>	14			WETZEL 1927.
„ <i>rubra</i> BONG.	14			„ 1928.
„ <i>subcordata</i>	14			„ 1927.
„ <i>subcordata</i> C. A. MEY.	14			„ 1928.
„ <i>viridis</i> (CHAIX.) LAM.	14			„ „
FAGACEAE				
<i>Fagus silvatica</i> L.	11			„ „
<i>Castanea crenata</i> SIEB. et ZUCC.	11			„ „
„ <i>sativa</i> MILL.	11			„ „
<i>Quercus cerris</i> L.		22		„ „
<i>Quercus coccinea</i> MUENCH		8		COSENS 1912.
„ <i>coccinea</i> WANGG.	11			WETZEL, 1928.
„ <i>Dalechampii</i> TENORE	11			„ „
„ <i>glandulifera</i> BLUME.	11			„ „
„ <i>Koehni</i> (ilex × robur?)	11			„ „
„ <i>Libani</i> OLIV.	11			„ „
„ <i>macranthera</i> FISCH. u MEY.	11			„ „
„ <i>nigra</i> L.		22		„ „
„ <i>pontica</i> K. KOCH.	11			„ „
„ <i>robur</i> L. pp. (<i>Q. pendu-</i> <i>culata</i>)	11			„ „
„ <i>sessilis</i> EHRH. (<i>Q. ses-</i> <i>siflora</i> SALISB.)	11			„ „
URTICALES				
MORACEAE				
<i>Morus acidosa</i> GRIFF.	14	28		OSAWA, 1920.
„ <i>alba</i> LINN ¹⁾	14			TAHARA, 1910.
	14	28		OSAWA, 1920.
„ <i>atropurpurea</i> ROXB.	14	28		„ „
„ <i>bombycis</i> KOIDZ. ¹⁾	14	28		„ „
	14 ²⁾			SINOTO, 1928a.
„ <i>indica</i>	14			TAHARA, 1910.
„ <i>Kagayamae</i> KOIDZ.	14	28		OSAWA, 1920.
„ <i>multicaulis</i> PERR. ¹⁾	14	28		„ „
„ <i>rotundifolia</i> KOIDZ.	14	28		„ „
„ <i>atropurpurea</i> × <i>M. alba</i> var. <i>Makado</i>		42		„ „
<i>Morus</i> cultivated races ¹⁾ :				
<i>Akagi</i>	variable	42		„ „

¹⁾ A great number of the cultivated races in Japan are considered to have been derived from *M. alba*, *M. bombycis* and *M. multicaulis*. The chromosome numbers were determined in 85 races (OSAWA, 1920).

²⁾ A pair of unequal chromosomes was distinguished by SINOTO

MORACEAE (continued)	n	2n		
<i>Morus</i> cultivated races (continued)				
<i>Akazuru</i>	14		OSAWA, 1920.	
<i>Aoki-ichihei</i>	variable	42	"	"
<i>Aoki-takasuke</i>	14		"	"
<i>Aoshôdo</i>		28	"	"
<i>Avato</i>	variable	42	"	"
<i>Beniguki</i>	14	28	"	"
<i>Benten</i>		28	"	"
<i>Bazan-oha</i>		42	"	"
<i>Date-akagi</i>		42	"	"
<i>Eiji-wase</i>	14		"	"
<i>Enshû-takasuke</i>		42	"	"
<i>Enashi-guwa</i>		28	"	"
<i>Fushimagari</i>		28	"	"
<i>Ginryô</i>		28	"	"
<i>Gobô</i>	variable	42	"	"
<i>Gorôji-wase</i>		28	"	"
<i>Goshoerami</i>	variable	42	"	"
<i>Gumma-akagi</i>		42	"	"
<i>Hachihei</i>	14		"	"
<i>Heijirô</i>		42	"	"
<i>Hikojirô</i>	14		"	"
<i>Ichihiei</i>		42	"	"
<i>Isebudo</i>		42	"	"
<i>Isemaguwa</i>		42	"	"
<i>Izu-wase</i>	variable	42	"	"
<i>Kairyô-nedzumigaeshi</i>		28	"	"
<i>Kairyô-rosô</i>	14	28	"	"
<i>Kairyô-wase-jûmonji</i>		28	"	"
<i>Kahachi</i>	14		"	"
<i>Kaneko</i>	variable	42	"	"
<i>Kanra-sô</i>	14	28	"	"
<i>Kasô</i>	14	28	"	"
<i>Kattaneo</i>		28	"	"
<i>Kazaemon</i>		28	"	"
<i>Kinbei</i>	variable	42	"	"
<i>Komaki</i>	14	28	"	"
<i>Kosaka</i>	14	28	"	"
<i>Kôsen</i>	14		"	"
<i>Koshiorihime</i>		42	"	"
<i>Kozaemon</i>		42	"	"
<i>Kumonryû</i>	14	28	"	"
<i>Makado</i>		28	"	"
<i>Mamono</i>	variable	42	"	"
<i>Memurasaki</i>		42	"	"

MORACEAE (continued)	n	2n	
<i>Morus</i> cultivated races (continued):			
<i>Mikuni-sô</i>		28	OSAWA, 1920.
<i>Moku-wase</i>		42	" "
<i>Murasaki-wase</i>	14	28	" "
<i>Naganuma</i>	14		" "
<i>Nagase</i>		28	" "
<i>Nakamagi</i>		28	" "
<i>Negoya-takasuke</i>		42	" "
<i>Nemurasaki</i>		42	" "
<i>Obata</i>	14	28	" "
<i>Ôgon</i>		42	" "
<i>Ôshima</i>		42	" "
<i>Ôshu-guwa</i>	variable	42	" "
<i>Ô-wase</i>		42	" "
<i>Ozuna</i>	variable	42	" "
<i>Rokunojô</i>		42	" "
<i>Sagami-wase</i>		42	" "
<i>Sagore</i>		28	" "
<i>Sanchû-takasuke</i>		42	" "
<i>Senmatsu</i>	14	28	" "
<i>Shidarc-guwa</i>		28	" "
<i>Shihôzaki</i>		42	" "
<i>Shimidzu-wase</i>	14	28	" "
<i>Shinamura</i>	14	28	" "
<i>Shigohachi</i>	14	28	" "
<i>Shimauchi</i>		42	" "
<i>Shônai-wase</i>	14	28	" "
<i>Sôsuke-wase</i>	14	28	" "
<i>Shiroshita</i>	14	28	" "
<i>Tago-wase</i>	variable	42	" "
<i>Taiyô</i>	variable	42	" "
<i>Takahashi</i>		28	" "
<i>Takara-sô</i>		28	" "
<i>Tôsuke</i>		42	" "
<i>Tsuruta</i>	variable	42	" "
<i>Yamato-wase</i>		42	" "
<i>Yanagita</i>	variable	42	" "
<i>Yatsubusa</i>	14	28	" "
<i>Yoshiuchi</i>		28 ¹⁾	" "
<i>Zenzô</i>		42	" "
<i>Cudrania triloba</i> HANCE	28 ¹⁾		SINOTO, 1928a.

¹⁾ A pair of unequal chromosomes was distinguished by SINOTO.

MORACEAE (continued)	n	2n	
<i>Ficus</i> ¹⁾			
Section <i>Eusyce</i>			
<i>Ficus carica</i> LINN.	13	26	CONDIT, 1928.
„ <i>erecta</i> THUNB.		26	„ „
„ <i>palmata</i> FORSK.	13	26	„ „
„ <i>pseudo-carica</i> MIQ.		26	„ „
Section <i>Urostigma</i>			
<i>Ficus elastica</i> ROXB.		26	„ „
„ <i>rubiginosa</i> DESF.		26	„ „
Section <i>Neomorpha</i>			
<i>Ficus glomerata</i> ROXBG.		probably 24	„
<i>Humulus japonicus</i> SIEB. et Zucc.	8		WINGE, 1914.
„ <i>japonicus</i>	10 ²⁾	20	TOURNOIS, 1914; WINGE, 1917, 1923.
		16	BARTLETT, 1915b.
„ <i>japonicus</i> (male)	7+13 ³⁾	17	KIHARA, 1928.
„ <i>japonicus</i> (plants of unknown sex)		16-17	„ „
„ <i>lupulus</i> L.	10 ²⁾	20	TOURNOIS, 1914; WINGE, 1914, 1917, 1923.
		20	BARTLETT, 1915b; WETTSTEIN, 1925.
<i>Cannabis gigantea</i>		20 & 40	BRESLAWETZ ⁴⁾ , 1926; LANG- LET, 1927b.
„ <i>sativa</i>	10 ⁵⁾		STRASBURGER, 1910c; TOUR- NOIS, 1914; McPHEE, 1924;
		20 & 40	BRESLAWETZ ⁴⁾ , 1926; LANG- LET, 1927b.
„ <i>sativa</i> L.	10		SINOTO, 1928a.
„ <i>sativa</i> var. <i>Karafuto</i>	10	20	HIRATA, 1924.
„ <i>sativa</i> var. <i>Tochigi</i>	10	20	„ „
„ <i>sativa</i> L. var. <i>Kij DC</i>		20 & 40	DE LITARDIÈRE, 1925.
„ <i>sativa</i> L. var. <i>communis</i>		20 & 40	„ „ „

¹⁾ Classification under sections is according to KING (1887—1888).

²⁾ WINGE (1923) found heterochromosomes and gave the chromosome complex as: ♀ 2n = 18 + x + x; ♂ 2n = 18 + x + y; ♀n = 9 + x; ♂n = 9 + x or 9 + y.

³⁾ According to KIHARA (1928) the complex is represented by ♂n = 7 + y₁ + x + y₂ and ♀n = 7 + x + x.

⁴⁾ By this investigator, the cells of the central cylinder of root-tips were found to contain 20 chromosomes, while the outer cells contained 40.

⁵⁾ STRASBURGER in 1909 had counted only 8 chromosomes.

URTICACEAE		n	2n	
<i>Urtica dioica</i> L.	16			STRASBURGER, 1910b.
	24 ¹⁾			MEURMAN, 1925 a, b.
			48-49	HEITZ, 1926.
„ <i>Dodarti</i>			24	„ „
„ <i>pilulifera</i>			24	„ „
„ <i>urens</i> L.	16			STRASBURGER, 1910b.
	12			MEURMAN, 1925a, b.
<i>Elatostema acuminatum</i>	16			STRASBURGER, 1910b.
„ <i>sessile</i>			32	STRASBURGER, 1910b.
SANTALES				
SANTALACEAE				
<i>Thesium intermedium</i> L. . . .	probably	probably		
	12	24		MODILEWSKI, 1928b.
PROTEACEAE				
<i>Protea lepidocarpon</i> R. BR. . .	12			BALLANTINE, 1909.
LORANTHACEAE				
<i>Dendrophthora gracile</i> EICH. .	9	18-20		YORK, 1913.
„ <i>opuntioides</i>				
(L) EICH.		18-22		„ „
<i>Viscum album</i>		20		PISEK, 1922.
	10	20		„ 1923.
BALANOPHORACEAE				
<i>Helosis guyanensis</i> RICH. . . .	18			UMIKER, 1920.
<i>Balanophora elongata</i> BL. . . .		ca. 16		ERNST, 1914.
„ <i>japonica</i>		94-112		KUWADA, 1928.
ARISTOLOCHIALES				
ARISTOLOCHIACEAE				
<i>Aristolochia clematitis</i>	7			SAMUELSON, 1914.
„ <i>fimbriata</i>	7			TÄCKHOLM & SÖDERBERG, 1918
„ <i>Sipho</i>	14			„ „ „ „
<i>Asarum europaeum</i>	ca. 12			„ „ „ „
RAFFLESIAEAE				
<i>Rafflesia Patma</i> BL.	12			ERNST & SCHMID, 1913.
HYDNORACEAE				
<i>Hydnora africana</i> THUNB. . . .		24 ²⁾		DASTUR, 1921.
POLYGONALES				
POLYGONACEAE				
<i>Koenigia Islandica</i> L.	14			HAGERUP, 1926.
<i>Emex australis</i> STEINH.	10			JARETZKY, 1928c.
„ <i>spinosa</i> CAMPD.	10			„ 1927b, 1928c.

²⁾ MEURMAN (1925b) found heterochromosomes: $2n = 23 + x$ or $23 + y$.

¹⁾ In previous list, GAISER (1926), this number was printed in the haploid column. Twenty-three chromosomes were actually counted by DASTUR.

POLYGONACEAE (continued)			n	2n
RUMEX ¹⁾				
Section <i>Lapathum</i>				
Subsection <i>Eulapathum</i>				
<i>Rumex alpinus</i>	10			KIHARA & ONO, 1926.
„ <i>alpinus</i> L.	10			JARETZKY, 1928c.
„ <i>Andraeanus</i>	60			KIHARA & ONO, 1926.
„ <i>aquaticus</i> L.		ca. 200		JARETZKY, 1928c.
„ <i>britannicus</i> L.		20		„ „
„ <i>conglomeratus</i> MURR. .		20		„ „
„ <i>cordifolius</i>	40			ROTH, 1906.
„ <i>crispus</i>	32			DUDGEON, 1918.
	30			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>crispus</i> L.	30			JARETZKY, 1927a.
„ <i>Daivoo</i> MAKINO		ca. 60		„ 1928c.
„ <i>dentatus</i> L.	20	40		„ 1928c.
„ <i>domesticus</i>		40		KIHARA & ONO, 1926.
„ <i>flexuosus</i>	10			JARETZKY, 1927a.
„ <i>hydrolapathum</i>	100			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>hymenosepalus</i>	50			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>japonicus</i>	50			KIHARA & ONO, 1926; ONO, 1926a.
„ <i>limosus</i> THUILL. . . .		40		JARETZKY, 1928c.
„ <i>maritimus</i>	20			KIHARA & ONO, 1926.
„ <i>maritimus</i> L.	20	40		JARETZKY, 1927a.
„ <i>maritimus</i> L. var. <i>stenophyllus</i> ZAP.	20			JARETZKY, 1928c.
„ <i>obtusifolius</i>	20			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>orientalis</i>	30			KIHARA & ONO, 1926.
„ <i>palustris</i> SM.		40		JARETZKY, 1928c.
„ <i>patientia</i>	30			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>pulcher</i> L.		40		JARETZKY, 1928c.
„ <i>reticulatus</i> BESSER. .	20	40		„ „
„ <i>salicifolius</i>	10			KIHARA & ONO, 1926; KIHARA, 1927b.
„ <i>salicifolius</i> WEINM. .	10			JARETZKY, 1928c.
„ <i>sanguineus</i>	10			ONO, 1927b.
„ <i>sanguineus</i> L.	10	20		JARETZKY, 1928c.
Subsection <i>Bucephalophorus</i>				
<i>Rumex bucephalophorus</i>	8			JARETZKY, 1927a.

¹⁾ ENGLER & PRANTL's sections are *Lapathum* and *Acetosella*.

POLYGONACEAE (continued)	n	2n	
RUMEX (continued)			
Section <i>Acetosa</i>			
<i>Rumex acetosa</i>	8		ROTH, 1906.
„ <i>acetosa</i> L.	7, 8 ¹⁾	14, 15	KIHARA & ONO, 1923a, b, 1924; SINOTO, 1924.
		22 ²⁾	ONO & SHIMOTOMAI, 1928.
		29 ³⁾	„ „ „ „
„ <i>acetosa</i> (female)	7 ⁴⁾		ONO, 1928.
	15 ⁵⁾		„ „
		21 ⁶⁾	„ „
„ <i>acetosa</i> (intersexual) . .		22 ⁷⁾	„ „
„ <i>acetosa</i> L. var. <i>haematinus</i> KIHLMAN	7, 8		JARETZKY, 1928c.
„ <i>acetosa</i> L. var. <i>pretensis</i> WALLR.	7, 8		„ „
„ <i>acetosella</i>	16		ROTH, 1906.
	20, 21 ⁸⁾		MEURMAN, 1925a, b; KIHARA, 1925, 1927b.
„ <i>acetosella</i> L.	21, 22	42, 43	KIHARA, 1927a.
„ <i>arifolius</i>	8		ROTH, 1906.
„ <i>arifolius</i> (male)	7, 8 ⁹⁾		KIHARA & ONO, 1926.
„ <i>arifolius</i> ALL.	7, 8		JARETZKY, 1927b, 1928c.
„ <i>hispanicus</i>	8		ROTH, 1906.
„ <i>hispanicus</i> KOCH. . . .	7, 8		JARETZKY, 1928c.
„ <i>lunaria</i> L.		20	„ „
„ <i>nivalis</i>	8		ROTH, 1906.
„ <i>nivalis</i> (male)	7, 8 ⁹⁾		KIHARA & ONO, 1926.
„ <i>roseus</i> L.	10		JARETZKY, 1928c.
„ <i>rugosus</i> CAMPD.	7, 8		„ „

¹⁾ The chromosome complex is written ♀ $2n = 12a + M + M$; ♂ $2n = 12a + m_1 + M + m_2$; ♀ $n = 6a + M$; ♂ $n = 6a + M$ or $6a + m_1 + m_2$; by KIHARA & ONO. ONO (1926c) describes the heterochromosomes as consisting of a larger two-armed X chromosome and 2 smaller Y (Y_1 and Y_2) chromosomes.

²⁾ The chromosome complex is written $2n = 18 + 2x + 2y$.

³⁾ The chromosome complex is written $2n = 24 + 3x + 2y$.

⁴⁾ In the diakinesis of megaspore mother cells, one pair of chromosomes was very much larger than the others and considered to be the pair of X chromosomes.

⁵⁾ This unreduced number was found in the heterotypic nuclear division of some pollen mother cells.

⁶⁾ In this triploid female the chromosome complex is written $2n = 18 + 3X = 21$; ♀ $n = 12 + X$; ♂ $n = 6 + X$.

⁷⁾ In this the chromosome complex is $2n = 18 + 2x + 2y = 22$.

⁸⁾ MEURMAN (1925b) reports the chromosome complex ♂ $n = 19 + 2x$ or $19 + Y$. KIHARA (1925) reports ♂ $2n = 38a + X + X + Y$; ♀ $2n = 38a + X + X + X + X$.

⁹⁾ The chromosome complex in these two species is written ♂ $n = 6 + X$, or $6 + Y + Y$.

POLYGONACEAE (continued)		n	2 n	
RUMEX (continued)				
Section <i>Acetosa</i> (continued)				
<i>Rumex scutatus</i>	8			ROTH, 1906.
	10 ¹⁾			NODA, 1926; KIHARA & ONO, 1926.
„ <i>scutatus</i> L. var. <i>glaucus</i>			20 ²⁾	JARETZKY, 1928c.
„ <i>thyrsoiflorus</i> FINGERH.	7, 8 ³⁾			MEURMAN, 1925a, b.
„ <i>tuberosus</i> L.	7, 8			JARETZKY, 1928c.
„ <i>vesceritensis</i> MURB.		20		„ „
„ <i>vesicarius</i> L.		20		„ „
	9		18	ONO, 1928.
„ <i>verticillatus</i> ⁴⁾	ca. 24			FINK, 1899.
„ <i>sp?</i>	20			ONO, 1926.
<i>Rheum crassinervium</i> FISCHER	22			JARETZKY, 1928c.
„ <i>Emodi</i> WALL.	11			„ „
„ <i>officinale</i> BAILL.	11			„ 1927b.
	11	22		„ 1928c.
„ <i>palmatum</i> L.	11	22		„ 1927b 1928c.
„ <i>rhaponticum</i> L.	22			„ 1928c.
„ <i>spiciforme</i> ROYLE.	11			„ „
„ <i>undulatum</i> L.	22			„ 1927b 1928c.
<i>Oxyria digyna</i> HILL.	7			KIHARA & ONO, 1926; KIHARA, 1927b; JARETZKY, 1928c.
„ <i>elatior</i> R. BR.	7			ONO, 1928; JARETZKY, 1928c.
POLYGONUM ⁵⁾				
Section <i>Bistorta</i>				
<i>Polygonum affine</i> DON.	11	22		JARETZKY, 1928c.
„ <i>ambiguum</i> MEISSN.	22			„ „
„ <i>bistorta</i> L.	22			„ „
„ <i>sphaerostachyum</i> MEISSN.		22		„ „ c
„ <i>vacciniifolium</i> WALL.	11			„ „
„ <i>viviparum</i> L.		110(?)		„ „
Section <i>Cephalophilon</i>				
<i>Polygonum capitatum</i> HAMILT.	11	22		JARETZKY, 1928c.
Section <i>Amblygonon</i>				
<i>Polygonum orientale</i> L.	11	22		JARETZKY, 1928c.

¹⁾ NODA always found one pair of chromosomes on the margin of the equatorial plate to be larger.

²⁾ Tetraploid cells with 18 paired and 2 separate chromosomes were found.

³⁾ MEURMAN (1925b) reported chromosome complex as $\delta n = 6 + X$ or $6 + 2Y$.

⁴⁾ This species was not classified according to section.

⁵⁾ These section names are as in ENGLER & PRANTL but the order of arrangement of sections differs.

POLYGONACEAE (continued)		n	2n		
POLYGONUM (continued)					
Section <i>Tovara</i>					
<i>Polygonum filiforme</i> THUNB. . .			ca. 44	JARETZKY, 1928c.	
" <i>virginianum</i> L. . .	22			" "	
Section <i>Persicaria</i>					
<i>Polygonum amphibium</i> L. . .			ca. 66	" "	
" <i>Blumei</i> MEISSN. . .			40	" "	
" <i>danubiale</i> KERNER. . .			22	" "	
" <i>hydropiper</i> L. . . .			20	" "	
" <i>laphathifolium</i> L. . .			22	"	1927b.
" <i>nodosum</i> PERS. (— <i>P. laphathifolium</i> L)	11	22		"	1928c.
" <i>persicaria</i> L. . . .	22	44		"	1927b, 1928c.
" <i>spectabile</i> MART. . .		66 ²⁾		"	1928c.
" <i>tinctorium</i> LOUR. . .		40 ²⁾		"	"
" <i>tomentosum</i> SCHRANK.	11	22		"	"
Section <i>Aconogonon</i>					
<i>Polygonum alpinum</i> ALL. . . .	10	20		"	"
" <i>divaricatum</i> L. . . .	50	ca. 100		"	"
" <i>Laxmanni</i> LEPECH. . .	10			"	"
" <i>molle</i> DON.	10	20		"	"
" <i>polystachyum</i> WAL- LICH.		22		"	"
" <i>sericeum</i> PALL. . . .	10	20		"	"
Section <i>Avicularia</i>					
<i>Polygonum agryrocoleon</i> STEU- DEL		40		"	"
" <i>aviculare</i> L. (forma)		40		"	"
" <i>aviculare</i> var. <i>mon-</i> <i>speliense</i> THIÉB. . .	20	40		"	"
" <i>Bellardi</i> ALL.	10	20		"	"
" <i>maritimum</i> L. . . .		20		"	"
" <i>plebejum</i> R. BR. . . .	20	40		"	"
Section <i>Pleuropterus</i>					
<i>Polygonum compactum</i> HOOK. .		ca. 44		"	"
" <i>cuspidatum</i> SIEB. et Zucc.		88(?)		"	"
" <i>sacchalinense</i> F. SCHM.		ca. 44		"	1927b; 1928c.

¹⁾ The actual counts were 62, 63, 64, and 65; therefore, probable number is 66.

²⁾ In more than 10 plates not more than 40 chromosomes were ever counted.

POLYGONACEAE (continued)	n	2n	
POLYGONUM (continued)			
Section <i>Tiniaria</i>			
<i>Polygonum Auberti</i> HENRY . .		20	JARETZKY, 1928c.
" <i>cilinode</i> MICH. . .	10		" "
" <i>convolvulus</i> L. . .	10	20	" "
" <i>dumetorum</i> L. . .	10		" "
" <i>Savatieri</i> NAKAI . .	10		SUGIURA, 1925b.
<i>Pleuropteropyrum Weyrichii</i>			
var. <i>alpinum</i> (MAX) GROSS			
(= <i>Polygonum Savatieri</i>			
MAK.)	10		JARETZKY, 1928c.
<i>Pleuropteropyrum Weyrichii</i> .	10		SUGIURA, 1928a.
" <i>Weyrichii</i>			
(F. SCHMIDT) GROSS	10	20	JARETZKY, 1928c.
<i>Persicaria glandulosa</i>		22	SUGIURA, 1928a.
" <i>perfoliata</i>		22	" "
" <i>Thunbergii</i>		ca. 34	" "
<i>Amblygonon orientale</i>		22	" "
<i>Fagopyrum cymosum</i> MEISSN. .	8		JARETZKY, 1928c.
" <i>emarginatum</i>		16	QUISENBERRY, 1927.
" <i>emarginatum</i>			
MEISSN.	8	16	JARETZKY, 1928c.
" <i>esculentum</i>		16	" 1927b.
" <i>esculentum</i>			
MOENCH	8		STEVENS, 1912, TAYLOR, 1925c.
" <i>esculentum</i> var. Ja-			
panese	8	16	QUISENBERRY, 1927.
" <i>esculentum</i> var. Sil-			
verhull	8	16	" 1927.
" <i>gracilipes</i> HEMSL. .		16	JARETZKY, 1928c.
" <i>rotundatum</i> BAB. .		16	" "
" <i>tartaricum</i>		16	" "
" <i>tartaricum</i> var.			
Notch Seeded . .		16	QUISENBERRY, 1927.
<i>Antigonon leptopus</i> Hook. . .		40	JARETZKY, 1928c.
<i>Mühlenbeckia complexa</i> MEISSN.			
" <i>platyclados</i>			
MEISSN.		20	" "
" <i>sagittifolia</i>			
MEISSN.		40	" "
<i>Coccoloba diversifolia</i> JACQ. .		200(?)	" "
<i>Triplaris surinamensis</i> CHAM. .		22	" "

CENTROSPERMAE	n	2n
CHENOPODIACEAE		
<i>Beta maritima</i> (= <i>B. vulgaris</i>)		
var. <i>perennis</i>)	9 ¹⁾	WINGE, 1917, 1925.
„ <i>maritima</i> L.	9	KUZMINA, 1927.
„ <i>trigyna</i>	27	BLEIER, 1928b.
„ <i>vulgaris</i> L.	9	WINGE, 1925, 1927b.
		DUDOK VAN HEEL, 1925; ART-SCHWÄGER, 1927; SUGIURA, 1927; OKSIJUK, 1927; LEVITSKY, 1927; BLEIER, 1928b.
„ <i>vulgaris</i> L. var. <i>chiloensis</i> HORT.	9	18 ²⁾ NEMEC, 1926; WINGE, 1927b.
„ <i>vulgaris</i> L. var. <i>saccharifera</i>	9	VILMORIN et SIMONET, 1927b.
„ <i>vulgaris</i> × <i>B. trigyna</i>	9 + $\frac{18}{2}$	18 KUZMINA, 1927.
		BLEIER, 1928b.
<i>Chenopodium album</i>	9	WINGE, 1917.
„ <i>bonus henricus</i>	18	„ „
„ <i>hybridum</i>	9	„ „
„ <i>murale</i>	9	„ „
„ <i>vulvaria</i>	9	„ „
<i>Spinacea oleracea</i>	6	STOMPS, 1910; WINGE, 1917, 1923.
		12, 24,
„ <i>oleracea</i> var. <i>Viktoria</i>		48 DE LITARDIERE, 1923b.
„ <i>oleracea</i> var. Weibull's original <i>Valkyria II</i>		12, 24,
		48 ³⁾ LANGLET, 1927b.
„ <i>oleracea</i> var. Weibull's original <i>Valkyria II</i>		12, 24,
		48 ³⁾ LANGLET, 1927b.
<i>Atriplex hastata</i>	ca. 24	ROSENBERG, 1909c.
„ <i>hastatum</i>	9	WINGE, 1917.
„ <i>hortensis</i> L.	9	TJEBBES, 1928.
„ <i>littorale</i>	9	WINGE, 1917.
„ <i>patulum</i>	18	„ „

¹⁾ The cultivated beet-root and sugar-beet were both found by WINGE (1925) to have 9 chromosomes. MATTHIJSEN according to FRANCK (1911) found $n = 8$ for a cultivated form.

²⁾ NĚMEC found some giant cells containing 44—45, 46, 56, and 120 chromosomes. WINGE (1927b) found cells with 36, 72, and ca. 144 chromosomes in cancer tissue on a root (36 was the number found most frequently).

³⁾ LANGLET found cells with 12 chromosomes in the youngest part of the perilem, cells with 24 chromosomes in a somewhat older part of the perilem, and still farther from the growing point cells with 48 chromosomes.

CHENOPODIACEAE (continued)	n	2n	
<i>Bassia hirsuta</i>	9		WINGE, 1917.
<i>Habitzia tamnoides</i>	9		DAHLGREN, 1916; WINGE, 1917.
NYCTAGINACEAE			
<i>Mirabilis Jalapa</i>	ca. 16 ¹⁾		TISCHLER, 1908.
	27		" 1928b.
" <i>tubiflora</i>	ca. 16 ¹⁾		" 1908.
	27		" 1928b.
" <i>Jalapa</i> × <i>M. tubi-</i>			
<i>flora</i>	ca. 16		" 1908.
CYNOCRAMBACEAE			
<i>Thelygonum Cynocrambe</i> L.		20	SCHNEIDER, 1913.
PHYTOLACACEAE			
<i>Phytolaca decandra</i>	18		KLEINMAN, 1923.
PORTULACACEAE			
<i>Portulaca grandiflora</i> LINDL.	9		TJEBBES, 1928.
CARYOPHYLLACEAE			
<i>Agrostemma Githago</i>	ca. 20		ROCÉN, 1926, 1927.
	24		BLACKBURN, 1928.
<i>Viscaria alpina</i>	12		" "
" <i>oculata</i> LINDL.	12		TJEBBES, 1928.
" <i>coeli-rosa</i> DC	12		" "
" <i>Sartori</i>	12		BLACKBURN, 1928.
" <i>oculata</i> × <i>coeli-rosa</i>	12		TJEBBES, 1928.
<i>Silene acaulis</i>	12		BLACKBURN, 1928, (1926), 1929
" <i>antirrhina</i>	12		" " " "
" <i>armeria</i>	12		" " " "
" <i>asterias</i>	12		" " " "
" <i>Behen</i>	12		" " " "
" <i>Bergiana</i>	12		" " " "
" <i>ciliata</i> (Edinburgh Bot.			
Gardens)	12		" "
" <i>ciliata</i> (CHODAT's Alpine			
Garden)	24		" 1927 1928.
" <i>ciliata</i> (Kew Gardens)	96		" " 1928.
" <i>compacta</i>	12		" "
" <i>conica</i>	12		" "
" <i>conoidea</i>	12		" "
" <i>corrugata</i>	12		" "
" <i>cretica</i>	12		" "
" <i>dichotoma</i>	12		" "
" <i>disticha</i>	12		" "
" <i>echinata</i>	12		" "
" <i>Elisabethae</i>		ca. 24	HEITZ, 1926.

¹⁾ These numbers were judged by the chromosome number of the hybrid.

CARYOPHYLLACEAE (continued)		n	2n	
<i>Silene</i> (continued)				
<i>Silene fimbriata</i>	12			BLACKBURN, 1928.
" <i>Friwaldskyana</i>	ca. 24			ROCÉN, 1926, 1927.
	12			BLACKBURN, 1928.
" <i>fruticosa</i>	12			" "
" <i>fuscata</i>	12			" "
" <i>gallica</i>	12			" "
" <i>gigantea</i>	12	24		HEITZ, 1926.
" <i>glauca</i>	12			BLACKBURN, 1928.
" <i>inflata</i>	12			" " (1926), 1929
" <i>inflata</i> f. <i>alpina</i>	12			HEITZ, 1926.
" <i>integripetala</i>	12			BLACKBURN, 1928.
" <i>italica</i>	12			" " (1926), 1929
" <i>linicola</i>	12			" "
" <i>maritima</i>	12			" "
" <i>mekinensis</i>	12			" " (1926) 1929,
" <i>mentagensis</i>	12			" "
" <i>muscipula</i>	12			" "
" <i>nicaensis</i>	12			" "
" <i>noctiflora</i>		24		HEITZ, 1926.
" <i>nutans</i>	12 ¹⁾			BLACKBURN, 1928, (1926) 1929.
" <i>obtusifolia</i>	12			" "
" <i>otites</i>	12 ²⁾			" " (1926) 1929.
" <i>pendula</i>	12			" 1924, 1928.
" <i>rupestris</i>	12			" 1928.
" <i>saxifraga</i>	12			" "
" <i>schajta</i>	12			" "
" <i>sericea</i>	12			" "
" <i>Sinowatsoni</i>	12 ³⁾			" "
" <i>squamigera</i>	12			" "
" <i>tatarica</i>	12			" "
" <i>tenuis</i>	12			" "
" <i>vallesia</i>	24			" 1927, 1928.
" <i>virescens</i>	12			" 1928.
" <i>viridella</i>	12			" (1926) 1929.
" <i>viridiflora</i>	12			" 1928.
" <i>volubilitana</i>	12			" "
" <i>Zawadskii</i>		24		HEITZ, 1926.
<i>Eudianthe coeli-rosea</i>	12			BLACKBURN, 1928.
" <i>corsica</i>	12			" "

¹⁾ This species shows 1 pair of ring-shaped bivalents approximately twice the size of the others.

²⁾ This species has an XY pair of chromosomes in the male plant. So $\delta n = 11 + X$ or $11 + Y$ and $\eta n = 11 + X$.

³⁾ This shows a different type of chromosome.

CARYOPHYLLACEAE (continued)		n	2n	
<i>Lychnis</i> (continued)				
<i>Lychnis Arkwrightii</i>	12			BLACKBURN 1928.
„ <i>chalcedonica</i>	12			„ „
„ <i>coronaria</i>	12			„ „
„ <i>flos cuculi</i>	12	24		„ 1924.
„ <i>flos cuculi</i>	12			HEITZ, 1926; BLACKBURN, 1928
„ <i>flos Jovis</i>	12	24		BLACKBURN, 1928.
„ <i>flos Jovis</i>	12			„ „
„ <i>Haageana</i>	12			„ „
„ <i>hybrida</i>	12			„ „
„ <i>Sieboldii</i> VAN HOUTTE. 12 ¹⁾				TAKAGI, 1928a.
<i>Petrocoptis Lagascae</i>	12			BLACKBURN, 1928.
<i>Heliosperma alpestre</i>	12			ROCÉN, 1926, 1927; BLACKBURN, 1928.
„ <i>quadrijidum</i>	12			BLACKBURN, 1928.
<i>Melandrium album</i>	12			SCHÜRHOFF, 1919, 1925b; WINGE, 1923 ²⁾ ; HEITZ, 1925a, b, 1926; MEURMAN 1925b ³⁾ ; BELAR, 1925 ³⁾ ; BLACKBURN, 1928 ³⁾ , (1926) 1929:
„ <i>album</i> var. <i>glabrum</i> 12				BLACKBURN, (1926) 1929.
„ <i>auriculatum</i>	12			„ 1928.
„ <i>californicum</i>	24			„ „
„ <i>divaricatum</i> ³⁾	12			„ „ (1926) 1929.
„ <i>Elizabethae</i>	12			„ „
„ <i>glutinosum</i> ³⁾	12			„ „ (1926) 1929.
„ <i>noctiflorum</i> L.				
„ FRIES.	12			SCHÜRHOFF, 1925.
„ <i>noctiflorum</i>	12			BLACKBURN, 1928.
„ <i>pennsylvanicum</i>	24			„ „
„ <i>rubrum</i> ³⁾	12			STRASBURGER, 1910b; c; SCHÜRHOFF, 1925b; MEURMAN ⁴⁾ , 1925b; HEITZ ⁴⁾ ;

¹⁾ Under a temperature of 38°—39° C. abnormalities in chromosome division occurred. As a result of non-conjunction of 24 univalents, diads might be produced, or following non-conjunction the 24 univalents might be distributed irregularly to the 2 poles and followed by homeotypic division give rise to tetrads with 2 larger and 2 smaller cells. The univalents, too, might split, giving rise to as many as 40 chromosomes to tetrads with varying numbers of cells.

²⁾ According to these authors an XY pair of chromosomes is present in the male plant. So $\bar{g}n = 11 + X$ or $11 + Y$ and $\bar{g}n = 11 + X$.

³⁾ In these species and this hybrid an unequal pair of heterochromosomes occurs in the male. So $\bar{g}n = 11 + X$ or $11 + Y$.

⁴⁾ These authors confirm the finding of an XY pair in *Melandrium rubrum*.

CARYOPHYLLACEAE (continued) n

2n

Melandrium (continued)

			1925b, 1926; ÅKERLUND ¹⁾ ; 1927; BLACKBURN ²⁾ , 1928 (1926), 1929.
<i>Melandrium virginicum</i>	24		BLACKBURN, 1928.
" „yunnanense”	12		" "
" „Zawadskii”	12		" "
" „album × rubrum ³⁾ ”	12		" „ (1926) 1929.
<i>Cucubalus baccifer</i>	12		" "
<i>Gypsophila elegans</i>	17		" "
" „perfoliata”	ca. 24		" "
" „repens”	18	35-36	ROCÉN, 1926, 1927. HEITZ, 1926.
<i>Vaccaria segetalis</i>	15		BLACKBURN, 1928.
<i>Dianthus barbatus</i>	15		" "
" „deltoides”	15		" "
<i>Saponaria calabrica</i>	14		" "
" „ocymoides”	14		" "
" „officinalis”	14		HEITZ, 1926, ROCÉN, 1927; BLACKBURN, 1928.
	14-16		ROCÉN, 1926.
" „pulchella”	14		BLACKBURN, 1928.
<i>Stellaria graminea</i>	(13)-14	(26)-28	HEITZ, 1926.
" „holostea”	10		ROCÉN, 1926.
	ca. 10		" 1927.
" „media”		36-42	HEITZ, 1926.
	ca. 20		ROCÉN, 1927.
" „uliginosa”		24-26	HEITZ, 1926.
<i>Malachium aquaticum</i>	14		" "
<i>Cerastium triviale</i>		ca. 110	" "
" „sp.”		ca. 100	" "
<i>Spergula arvensis</i>		18	" "
<i>Corrigiola littoralis</i>	ca. 8(?)		ROCÉN, 1927.

RANALES

NYMPHAEACEAE

<i>Nelumbo lutea</i> WILLD.	ca. 8		FARR, 1922.
" „lutea”		16	LANGLET & SÖDERBERG, 1927.
" „nucifera”		16	" " " "
<i>Cabomba caroliniana</i>	12	24	NITZSCHKE, 1914.
" „caroliniana (?)”		104(?)	LANGLET & SÖDERBERG, 1927.
<i>Brasenia purpurea</i>		80(?)	" " " "
<i>Victoria cruziana</i>	(12) ⁴⁾		" " " "

¹⁾ ÅKERLUND considered there were heterochromosomes as $\varphi n = 11 + X$.²⁾ These authors confirm the finding of an XY pair in *Melandrium rubrum*.³⁾ See footnote 3 on page 189.⁴⁾ Judged by the hybrid (*V. regia* × *V. cruziana*) only.

NYMPHAEACEAE (continued) n		n2	
<i>Victoria</i> (continued)			
<i>Victoria</i> „ <i>imperialis hybrida</i> ”			
(V. regia × V. cruzi-ana)			
ana)	22		LANGLET & SÖDERBERG, 1927.
„ „ <i>pseudocruziana</i> ” . .	23	„	„
„ regia	20	„	„
<i>Euryale ferox</i>	58	„	„
<i>Nymphaea alba</i>	32		GUIGNARD, 1897, 1898.
	48		STRASBURGER, 1900.
		ca. 48	LIEHR, 1916.
	56 or 42 ¹⁾		LANGLET & SÖDERBERG, 1927.
„ candida	ca. 58	ca. 112	„
„ capensis	14 ²⁾		„
„ capensis var. zansibariensis		28	„
„ gigantea	112(?)	224(?)	„
„ lotus		56	„
„ mexicana		56	„
„ odorata		84	„
„ rubra		56	„
„ stellata		28	„
„ tetragona		112	„
„ tuberosa	(42) ²⁾		„
„ sp. (from Madagascar).		28	„
„ „Hofgärtner GRAEBNER” (N. lotus × N. rubra)		56	„
„ „tetragona helvola” (N. mexicana × N. tetragona)		84	„
<i>Nuphar advena</i>		34	„
„ japonicum		34 ³⁾	„
„ luteum	16		GUIGNARD, 1897.
	17		LUBIMENKO & MAIGE, 1907.
		34	ROSENBERG, 1909c; LANGLET & SÖDERBERG, 1927.
		ca. 48	LIEHR, 1916.
„ microphylla		34	LANGLET & SÖDERBERG, 1927.
„ pumilum		34	„

¹⁾ No figures of this species were seen by LANGLET & SÖDERBERG (1927) but they have interpreted a Figure of LUBIMENKO & MAIGE (1907) as having ca. 42 chromosomes.

²⁾ Judged by hybrids of each.

³⁾ One pair of chromosomes is outstanding because of a relatively large pair of satellites.

CERATOPHYLLACEAE	n	2n	
<i>Ceratophyllum demersum</i> . . .	ca. 12		LANGLET & SÖDERBERG, 1927.
„ <i>submersum</i> . . .	12		STRASBURGER, 1902.
RANUNCULACEAE . . .			
<i>Glaucidium palmatum</i> SIEB. et			
ZUCC.		20	MIYAJI, 1927b.
<i>Hydrastis canadensis</i>		26 ¹⁾	LANGLET, 1928.
<i>Paeonia albiflora</i> PALL.		10	MIYAJI, 1927b.
	5		LANGLET, 1927a.
„ <i>albiflora</i> var. „ <i>Agida</i> ”	5		„ „
„ <i>albiflora</i> var. „ <i>Boule de</i>			
„ <i>Neige</i> ”	5		„ „
„ <i>albiflora</i> var. „ <i>Etienne</i>			
„ <i>Denis</i> ”	5		„ „
„ <i>albiflora</i> var. „ <i>Kasuga-</i>			
„ <i>no</i> ”		10	„ „
„ <i>albiflora</i> var. „ <i>Nobilis-</i>			
„ <i>sima</i> ”	5		„ „
„ <i>albiflora</i> var. „ <i>Potsii-</i>	5		„ „
„ <i>plena</i> ”			
„ <i>albiflora</i> var. „ <i>Prince</i>			
„ <i>Antoine d'Ahrenberg</i> ”	5		„ „
„ <i>albiflora</i> var. „ <i>Rubens</i> ”	5		„ „
„ <i>anomola</i>		10	„ „
„ <i>anomola hybrida</i>	5		„ „
„ <i>anomola nudicarpa</i>	5		„ „
„ <i>Bakeri</i>		20	„ „
„ <i>corallina Corsica</i>		10	„ „
„ <i>corallina Russii</i>		10	„ „
„ <i>corallina triternata</i>	5		„ „
„ <i>coriacea</i>	10		„ „
„ <i>decora</i>	10		„ „
„ <i>Delavayi lutea</i>	5		„ „
„ <i>Mlokasewitschii</i>		10	„ „
„ <i>Moutan</i>	5		„ „
„ <i>obovata</i> var. <i>alba</i>		20	„ „
„ <i>officinalis</i>	8		WEFELSCHIED, 1911.
„ <i>officinalis eufemina</i>	10		LANGLET, 1927a.
„ <i>officinalis humilis</i>	10		„ „
„ <i>officinalis leiocarpa</i>	10		„ „
„ <i>officinalis</i> var. „ <i>muta-</i>			
„ <i>bilis</i> ”	10		„ „
„ <i>officinalis</i> var. „ <i>rubr-</i>			
„ <i>plen</i> ”	10		„ „

¹⁾ One pair of chromosomes was recognized by its quite large satellites.

RANUNCULACEAE (continued)		n	2n	
<i>Paeonia</i> (continued)				
<i>Paeonia officinalis villosa</i> . . .	10			LANGLET, 1927a.
„ <i>peregrina</i>	8			WEFELSCHIED, 1911.
„ <i>tenuifolia</i>		10		LANGLET, 1927a.
„ <i>Veitchii</i>	5			„ „
„ <i>Wittmaniana</i>		20		„ „
„ (several species). . .	12	24		OVERTON, E., 1893a, b.
„ <i>albiflora</i> × <i>P. Wittmaniana</i>		15		LANGLET, 1927a.
„ <i>anomala</i> × <i>P. tenuifolia</i>		10		„ „
„ <i>officinalis</i> × <i>P. Wittmaniana</i>		20		„ „
<i>Caltha laeta</i> var. <i>alpina</i> . . .		32		LANGLET, 1927a.
„ <i>leptocephala</i>		48		„ „
„ <i>palustris</i>		32		„ „
„ <i>palustris</i> var. <i>flor. plen.</i>		ca. 58-59		„ „
„ <i>palustris</i> var. <i>flor. plen.</i>				
„ <i>nana</i>		ca. 58-59		„ „
„ <i>palustris</i> var. <i>flor. plen.</i>				
„ <i>praecox</i>		ca. 58-59		„ „
„ <i>palustris</i> var. <i>semitplena.</i>		ca. 58-59		„ „
„ <i>radicans</i> FORST.		48		HOCQUETTE, 1922.
<i>Trollius caucasicus</i>		16		LANGLET, 1927a.
„ <i>chinensis</i>		16		„ „
„ <i>europaeus</i>	12 ¹⁾			LUNDEGARDH, 1909.
	11-12			LUNDEGARDH, 1914b.
		16		LANGLET, 1927a.
„ <i>hybridus</i> HORT. var.				
„ <i>Orange Globe</i>		16		„ „
<i>Helleborus foetidus</i> L.	16			MOTTIER, 1897.
„ <i>foetidus</i>	12			STRASBURGER, 1888; OVERTON, J. B., 1905.
„ <i>foetidus</i>		32		LANGLET, 1927a.
„ <i>hybridus</i> HORT.		32		„ „
„ <i>niger</i>		32		„ „
<i>Nigella aristata</i>		12		„ „
„ <i>arvensis</i> L.		12		HOCQUETTE, 1922.
„ <i>arvensis</i>	6			LANGLET, 1927a.
„ <i>damascena</i>	> 10 ²⁾			GUIGNARD, 1901.
	6			LANGLET, 1927a.

¹⁾ This number was determined from 24 prochromosomes.²⁾ GUIGNARD found > 30 chromosomes in the fertilized egg cell.

RANUNCULACEAE (continued)	n	2n	
<i>Nigella</i> (continued)			
<i>Nigella damascena</i> var. <i>flor.</i>			
<i>plen.</i> „Miss Jekyll” . .		12	LANGLET, 1917a.
„ <i>damascena</i> L. var. <i>genu-</i>			
<i>ina</i> BRIQ.		12	HOCQUETTE, 1922
„ <i>diversifolia</i>			LANGLET, 1927a.
„ <i>garidella</i>		12	„ „
„ <i>hispanica</i>	6		„ „
„ <i>nigellastrum</i> WILLK. .			
(<i>Garidella nigellas-</i>			
<i>trum</i>)		12	HOCQUETTE, 1922.
„ <i>orientalis</i>	6		LANGLET, 1927a.
„ <i>sativa</i> L.		12	HOCQUETTE, 1922.
„ <i>sativa</i>	6		LANGLET, 1927a.
„ <i>viridis</i>		12	FRANCK, 1911.
<i>Leptopyrum fumarioides</i> . . .		14	LANGLET, 1927a.
<i>Actaea spicata</i>		16	„ „
<i>Cimicifuga cimicifuga</i>		16	„ „
„ <i>simplex</i> (?)		14	„ „
<i>Aquilegia atropurpurea</i>		14	„ „
„ <i>chrysantha</i>	7		SKALINSKA, 1928.
„ <i>haylodgensis</i> HORT. .		14	LANGLET, 1927a.
„ <i>vulgaris</i>	7		WINGE, 1925.
„ <i>vulgaris</i> var. <i>parviflo-</i>			
<i>ra</i>		14	LANGLET, 1927a.
„ <i>vulgaris</i> × <i>A. chry-</i>			
<i>santha</i>	7		SKALINSKA, 1928.
<i>Delphinium Ajacis</i>	12		OVERTON, E., 1893a, b; Os-
			TERWALDER, 1898; VON BOE-
			NICKE, 1911.
	3	16	TJEBBES, 1927.
		16	LANGLET, 1927a.
<i>Delphinium belladonna</i> HORT. .		48	„ „
„ <i>cardiopetalum</i> L. . .	3		TJEBBES, 1928.
„ <i>chinense</i>		16	LANGLET, 1927a.
„ <i>consolida</i> L. . . .		16	HOCQUETTE, 1922; LANGLET,
			1927a.
„ <i>consolida</i>	3		TJEBBES, 1927.
„ <i>fissum</i> WALDST et			
KIT.		32	HOCQUETTE, 1922.
„ <i>hybridum</i> HORT. .		32	LANGLET, 1927a.
„ <i>nudicaule</i>	8		TJEBBES, 1927.
„ <i>orientale</i> var. (?) . ca. 8			BECKMAN, 1928.
„ <i>speciosum</i>		16	LANGLET, 1927a.
„ <i>staphysagria</i> L. . .		16	HOCQUETTE, 1922.

RANUNCULACEAE (continued)		n	2n	
<i>Delphinium</i> (continued)				
<i>Delphinium staphysagria</i> . . .			32	LANGLET, 1927a.
" <i>truncatum</i> . . .			32	" "
<i>Aconitum Californicum</i> . . .			32	LANGLET, 1927a.
" <i>Delavayi</i>			32	" "
" <i>exelsum</i>			16	" "
" <i>Kusnetzoffii</i>			32	" "
" <i>napellus</i>	12	ca. 24		OVERTON, E., 1893a, b, 1894.
	12			OSTERWALDER, 1898.
			24	LANGLET, 1927a.
" <i>paniculatum</i>			32	" "
" <i>septentrionale</i>			16	" "
" <i>Spark's</i> var.			24	" "
" <i>variegatum</i>			24	" "
" <i>vulparia</i>			16	" "
" <i>Wilsonii</i>		ca. 64		" "
" <i>sp.</i> (from Kamtschatka)			16	" "
<i>Anemone blanda</i>			16	" "
" <i>hepatica</i> var. <i>Alb.-ros.</i>			14	" "
" <i>hepatica</i> var. <i>candida</i> .			14	" "
" <i>hepatica</i> var. <i>multiloba</i>			28	" "
" <i>hepatica</i> var. <i>rubr.</i>				
" <i>plen.</i>			14	" "
" <i>hupehensis</i>			16	" "
" <i>japonica</i> S. et Z.	8			TAKAMINE, 1916.
<i>Anemone montana</i>			16	LANGLET, 1927a.
" <i>multifida</i>			32	" "
" <i>narcissiflora</i>	ca. 7-8			" "
" <i>nemorosa</i>	12			WINGE, 1917.
" <i>pratensis</i>			16	LANGLET, 1927a.
" <i>rupicola</i>			32	" "
" <i>silvestris</i>			16	" "
" <i>silvestris</i> var. <i>flor.</i>				
" <i>plen.</i>			16	" "
<i>Clematis Jackmanni</i> HORT.			16	" "
" <i>ochotensis</i>			16	" "
" <i>paniculata</i>			16	" "
" <i>recta</i>			16	GUIGNARD, 1885; LANGLET, 1927a.
" <i>stans</i>			16	" "
" <i>Hendersonii</i> HORT.				
= <i>C. integrifolia</i> × <i>C. viticella</i>)			16	" "

RANUNCULACEAE (Continued)		n	2n	
<i>Myosurus minimus</i> L.	8			MANN, 1892.
			16	HOCQUETTE, 1922.
<i>Trautvetteria palmata</i>			28	LANGLET, 1927a.
<i>Ranunculus abortivus</i>			16	" "
" <i>aconitifolius</i>			16	" "
" <i>acris</i> L. (normal race)			12 ¹⁾	SOROKIN, 1924, 1927b.
" <i>acris</i> L. (Gynodimorphic races)			13, 14, 15, 18 ²⁾	SOROKIN, 1924.
" <i>acris</i> L. (Gynodimorphic race)			18 ³⁾	" 1927b.
" <i>acris</i> L. (n = 18) × (n = 12)			12, 13, 15-17	" "
" <i>acris</i> L.	7 ⁴⁾		14 ⁵⁾	" 1927a, 1927c. 1927d; LANGLET, 1927a.
		7 ⁶⁾	14	SENJANINOVA, 1926.
			29-32 ⁷⁾	" "
" <i>acris</i> var. <i>femina</i>	7		14	LANGLET, 1927a.
" <i>acris</i> var. <i>flor. plen</i>			14	" "
" <i>acris</i> L. var.				
" <i>Stevenii</i> REGEL			14	MIYAJI, 1927a; LANGLET, 1927a.
" <i>acris</i> L. subsp. <i>bo-reauanus</i> (JORD) ROUY et FOUC.			16	HOCQUETTE, 1922.
<i>Ranunculus alpestris</i>			16	LANGLET, 1927a.
" <i>amplexicaulis</i>			16	" "
" <i>anemonaeifolius</i>			24	" "

¹⁾ Plants of the normal race of *R. acris* collected in Europe were found to have $2n = 12$ chromosomes by SOROKIN (1924) and this was confirmed in 1927 SOROKIN (1927b).

²⁾ Gymnodimorphic races were found to have 13, 14, 15 and 18 chromosomes (SOROKIN 1924).

³⁾ The gynodimorphic race with $2n = 18$ was used in crosses with the normal race ($2n = 12$) and produced progeny with 12, 13, 15, 16 and 17 chromosomes having different formulae (SOROKIN, 1927b).

⁴⁾ SOROKIN (1927a) reported ($n = 7$) for a form from the New York Bot. Gard. The chromosomes were classified according to size and form, giving the formula $2(A + B + c + c' + d + e + f)$.

⁵⁾ SOROKIN (1927d) reported that the most common formula of the common form from a number of localities was $2(A + B + C + c + d + e + f)$.

⁶⁾ One chromosome was called a heterochromosome, as it may have either a large or a small satellite.

⁷⁾ This is considered to be a tetraploid race ($2n = 28$), the extra chromosomes probably being the result of early splitting of several of the chromosomes.

RANUNCULACEAE (continued)	n	2n	
<i>Ranunculus</i> (continued)			
<i>Ranunculus arvensis</i>	32	LANGLET, 1927a.	
" <i>asiaticus</i> „ <i>superbus</i>			
HORT.	16	" "	
" <i>bulbosus</i>	16	" "	
" <i>bulbosus</i> var. <i>femina</i>	16	" "	
" <i>bulbosus</i> var. <i>flor. plen.</i>	16	" "	
" <i>bulbosus</i> L. subsp. <i>eu-bulbosus</i> BRIQ. var. <i>bulbifer</i> (JORD.) BRIQ. . .	16	HOCQUETTE, 1922.	
" <i>bulbosus</i> subsp. <i>eu-bulbosus</i> var. <i>bulbifer</i> fa. <i>foliis albo maculatis</i>	16	" "	
" <i>carpaticus</i>	14	LANGLET, 1927a.	
" <i>caucasicus</i>	16	" "	
" <i>cymbalaria</i>	16	" "	
" <i>ficaria</i> (<i>Ficaria verna</i>)	24	WINKLER, 1926.	
" <i>ficaria</i> (<i>Ficaria ranunculoides</i> ROTH) ca. 6.		SOUÈGES, 1913.	
" <i>ficaria</i>	32	LANGLET, 1927a.	
" <i>ficaria</i> L. subsp. <i>euficaria</i> BRIQ. .	32	HOCQUETTE, 1922.	
" <i>ficaria</i> var. <i>flor. plen.</i>	16	LANGLET, 1927a.	
" <i>ficaria</i> var. <i>ochroleuca</i>	32	" "	
" <i>flammula</i>	32	" "	
" <i>graminifolius</i>	16	" "	
" <i>illyricus</i>	32	" "	
" <i>lanuginosus</i> var. <i>flor. plen.</i>	14	" "	
" <i>muricatus</i>	48	" "	
" <i>nyssanus</i>	16	" "	
" <i>ophioglossifolius</i>	16	" "	
" <i>parviflorus</i>	28	" "	
" <i>platanifolius</i>	14	" "	
" <i>repens</i>	12	MARCHAL, 1920.	
	32	LANGLET, 1927a.	

RANUNCULACEAE (continued) n

2n

Ranunculus (continued)*Ranunculus repens* var. *flor.*

plen. 32 LANGLET, 1927a.

" *repens* var. *typicus*

BECK. 32 HOCQUETTE, 1922.

" *reptans*

8 LIEHR 1916.

32 LANGLET, 1927a.

" *serbicus*

24

" "

" *Sommieri*

24

" "

" *trachycarpus*

32

" "

" *trilobus*

43

" "

" *velutinus*.

14

" "

Batrachium hederaceum.

16

" "

" *marinum*.

32

" "

" *paucistamineum*.

16

" "

THALICTRUM ¹⁾Section *Camptonota*1. *Rotundifolia**Thalictrum javanicum* BLUME .

42 KUHN, 1923a.

2. *Petaloida**Thalictrum anemonoides* MICHX42 ²⁾ KUHN, 1923a." *aquilegifolium*.14 & 23³⁾ LANGLET, 1927a, b." *aquilegifolium* L. ⁴⁾.7 14 & 23⁵⁾ KUHN, 1923a." *aquilegifolium* var.*atropurpureum*.

14

" "

" *aquilegifolium* „hy-*bridum*” HORT.

23

LANGLET, 1927a.

" *orientale* BOISS.

42

KUHN, 1923a.

" *petaloideum* L.

14

" "

" *tuberosum* L.

23

" "

Section *Camptogastra*3. *Sparsiflora**Thalictrum Przewalskii*.

70 LANGLET, 1927a.

" *Przewalskii* MAXIM.

14 KUHN, 1923a.

" *sparsiflorum* TURCZ.

42

" "

" *squarrosum* STE-PHAN ⁶⁾

42

" "

4. *Makrocarpa**Thalictrum calabricum* SPRENG⁴⁾42 ⁷⁾ " "¹⁾ Classification into sections is according to ENGLER & PRANTL.²⁾ Frequently a smaller number (35—37) was found.³⁾ „Disomatic” nuclei with 26 chromosomes (thought to be 28 with 2 drawn away by the knife in sectioning) were also found in the root-tips.⁴⁾ Plants from two different sources were studied.⁵⁾ Disomatic regions were recognizable in the root-tips.⁶⁾ Plants from three different sources were studied.⁷⁾ Frequently 43 or 44 chromosomes were counted.

RANUNCULACEAE (continued)	n	2n	
THALICTRUM (Continued)			
Section <i>Campyogastrea</i> (continued)			
5. <i>Platycarpa</i>			
<i>Thalictrum cheidonii</i> DC. . .		42	KUHN, 1928a.
" <i>ciliatum</i> WALL. . .		42	" "
6. <i>Podocarpa</i>			
<i>Thalictrum Fendleri</i>		28	LANGLET, 1927a.
" <i>Fendleri</i> ENGELM. ¹⁾	14	28	KUHN, 1928a.
7. <i>Dioica</i>			
<i>Thalictrum corynellum</i> DC. ¹⁾ .		28	KUHN, 1928a.
" <i>dioicum</i> L.		42	" "
" <i>purpurascens</i>		24	OVERTON, J. B., 1904, 1905.
	12		STRASBURGER, 1904b; OVERTON, J. B., 1909.
		42	LANGLET, 1927a.
" <i>purpurascens</i> L.	12	24	KUHN, 1928a.
8. <i>Flexuosa</i>			
<i>Thalictrum bulgaricum</i> VELEN.		28	KUHN, 1928a.
" <i>elatum</i> JACQ.		28	" "
" <i>flavum</i>		84	LANGLET, 1927a.
" <i>flavum</i> L. ¹⁾		84	KUHN, 1928a.
" <i>flexuosum</i> BERNH. ²⁾	21	42	" "
" <i>glaucum</i>		28	LANGLET, 1927a.
" <i>glaucum</i> DESF.		28	KUHN, 1928a.
" <i>foetidum</i>		14	LANGLET, 1927a.
" <i>foetidum</i> L. ¹⁾		14	KUHN, 1928a.
" <i>galioides</i> NESTL.		28	" "
" <i>lucidum</i> L. ³⁾	14	28	" "
" <i>montanum</i> WALLR.	7	14	" "
" <i>simplex</i>		56	LANGLET, 1927a.
" <i>rariflorum</i>		56, 112	" "
" <i>simplex</i> (<i>rariflorum</i>)		56, 112	" "b.
" <i>simplex</i> L. ⁴⁾	28	56	KUHN, 1928a.
" <i>simplex</i> L. ⁵⁾	35	70	" "
" <i>Kemense</i>		70	LANGLET, 1927a.

¹⁾ Plants from two different sources were studied.

²⁾ Plants from six different sources and under the names *saxatile*, *minus*, *purpurascens*, *minus* × *medium* and *flexuosum*, were all considered to be *Th. flexuosum* BERNH. and were found to have the same chromosome number.

³⁾ Plants from three different sources were studied.

⁴⁾ Plants from four different sources were studied. Those under the names *var. amurensis* from Leningrad were found to have $n = 28$.

⁵⁾ Others under the names *Kemense*, *var. dubium* and *simplex* were found to have $n = 35$.

RANUNCULACEAE (continued)		n	2n	
Thalictrum (continued)				
Section (?) ¹⁾				
<i>Thalictrum alpinum</i>			14	LANGLET, 1927a.
" <i>angustifolium</i>			23	" "
" <i>banaticum</i>				
(ROCHET?)			42	KUHN, 1928a.
" <i>calabricum</i>			42	LANGLET, 1927a.
" <i>confine</i> FERNALD			42	KUHN, 1928a.
" (<i>cornuti</i> ?)			42	LANGLET, 1927a.
" <i>Delavayi</i>			42	" "
" <i>Delavayi</i> FRANCH.			42	KUHN, 1928a.
" <i>diptercarpum</i>			28	LANGLET, 1927a.
" <i>diptercarpum</i>				
FRANCH.			28	KUHN, 1928a.
" <i>exaltatum</i>			28, 35	" "
" <i>lucidum</i>			28	LANGLET, 1927a.
" <i>lucidum</i> var. <i>laserpitiifolium</i>			28	" "
" <i>maximum</i> (?)			42	KUHN, 1928a.
" (<i>Mediterraneum</i> ?)			28	LANGLET, 1927a.
" <i>medium</i> JACQ.			28	" "
" <i>minus</i>			12	OVERTON, J. B., 1909.
			42	LANGLET, 1927a.
" <i>minus Kochii</i>			42	" "
" <i>minus odoratum</i>			42	" "
" <i>minus</i> L. subsp. <i>dumense</i> (DUMORT)				
ROUY et FOUC.			48	HOCQUETTE, 1922.
" (<i>pauciflorum</i> ?)			42	LANGLET, 1927a.
" (<i>rubellum</i> ?)			42	" "
" <i>rufinerve</i> LEJ. et				
COURT			28	KUHN, 1928a.
" <i>rugosum</i> AIT.			28	" "
" <i>sp.</i>			35	LANGLET, 1927a.
" <i>flexuosum</i> BERNH.				
× <i>Th. simplex</i> L.				
(?)			47	KUHN, 1928a.
<i>Adonis aestivalis</i>			32	LANGLET, 1927a.
" <i>apennina</i>			16	" "
" <i>autumnalis</i>			32	" "
" <i>dahurica</i>	12			ISHIKAWA, 1916; TAKAMINE, 1916.
			24	LANGLET, 1927a.

¹⁾ The following species were not classified under sections.

RANUNCULACEAE (continued)	n	2n	
<i>Adonis</i> (continued)			
<i>Adonis flammea</i>	16		LANGLET, 1927a.
" <i>pyrenaica</i>	8		" "
" <i>vernalis</i>	8		" "
" <i>volgensis</i> × <i>A. vernalis</i> .		16	" "
LARDIZABALACEAE			
<i>Akebia lobata</i>	16		(KUWADA, 1916), given by Ishi- KAWA, 1916.
" <i>quinata</i> D.C.	16	32	VELSER, 1913.
" <i>quinata</i>	16		KUWADA, given by ISHIKAWA, 1916.
<i>Lardizabala biternata</i>		28	LANGLET, 1928.
BERBERIDACEAE			
<i>Podophyllum Emodi</i>		12 ¹⁾	DE LITARDIÈRE, 1921; LANG- LET, 1928.
" <i>Leichtlinii</i>		12	LANGLET, 1928.
" <i>pellatum</i> L.	8 ²⁾	16	MOTTIER, 1897, 1905 ³⁾ .
	8		OVERTON, J. B., 1905, 1922.
	6		LUBLINER, 1925.
		12	DE LITARDIÈRE, 1921.
	6		KAUFMANN, 1926.
		14	RICHARDS, 1909.
<i>Jeffersonia binata</i> (diphylla) .		12	LANGLET, 1928.
" <i>dubia</i> ⁴⁾		12	" "
<i>Diphylleia cymosa</i>		12	" "
<i>Nandina domestica</i>		20	" "
<i>Epimedium macranthum</i>		12	" "
" <i>Musschianum</i>		12	" "
" <i>pinnatum</i>		12	DE LITARDIÈRE, 1921; LANG- LET, 1928.
" <i>rubrum</i>		12	LANGLET, 1928.
<i>Vancouveria</i> (<i>Epimedium</i>)			
<i>hexandra</i>		12	" "
<i>Caulophyllum</i> (<i>Leontice</i>) <i>thalic-</i> <i>troides</i>		16	" "
<i>Berberis</i> (<i>Mahonia</i>) <i>aquifolium</i> . .	14		TISCHLER, 1928b.
" <i>buxifolia</i>	28		" "

¹⁾ One root was found by LANGLET to have disomatic cells with $2n = 24$.

²⁾ In 1897 MOTTIER found 6 chromosomes in several cases but it was thought that in sectioning the knife might have displaced 2 chromosomes. In 1905 OVERTON accepted $n = 8$ as correct.

³⁾ In previous list, GAISER (1926), this reference was erroneously given as MOTTIER (1907).

⁴⁾ This species is marked by the presence of a pair of satellites.

BERBERIDACEAE (continued)		n	2n	
<i>Berberis</i> (continued)				
<i>Berberis Darwinii</i>	14			HIMMELBAUR, 1912; TISCHLER 1927a, 1928b.
„ <i>empetrifolia</i>	14			HIMMELBAUR, 1912; TISCHLER, 1927a, 1928b.
„ (<i>empetrifolia</i> × <i>Dar-</i> <i>winii</i>)	14			HIMMELBAUR, 1912.
„ <i>integerrima</i>	14			TISCHLER, 1928b.
„ (<i>Mahonia japonica</i>	14			„ „
„ (<i>Mahonia repens</i>	14			„ „
„ <i>stenophylla</i> HORT.				
(= <i>B. empetrifolia</i> × <i>B. Darwinii</i>).	14			„ 1927a.
„ <i>Thunbergii</i>	14			„ 1928b.
„ <i>Veitchii</i>	14			„ „
„ sp. (<i>verna</i>)		23		LANGLET, 1928.
„ <i>vulgaris</i>	14			TISCHLER, 1928b.
MENISPERMACEAE				
<i>Menispermum canadense</i>		52-54		LANGLET, 1928.
„ <i>dahuricum</i>		52-54		„ „
MAGNOLIACEAE				
<i>Magnolia denudata</i> (= <i>obovata</i>) ca. 48				ANDREWS, 1901.
„ <i>obovata</i>	> 50			WEFELSCHIED, 1911.
„ <i>foetida</i> (= <i>grandiflo-</i> <i>ra</i>).	57(?)			YAMAKAWA, 1916 (given by Is- HIKAWA, 1916).
„ <i>Kobus</i>	19			YAMAKAWA, 1916 (given by Is- HIKAWA, 1916).
„ <i>parviflora</i>	19			YAMAKAWA, 1916 (given by Is- HIKAWA, 1916).
„ <i>precia</i> (= <i>Yulan</i>) . . ca. 40				GUIGNARD, 1897.
„ <i>Youlan</i>	> 50			WEFELSCHIED, 1911.
„ <i>tripetala</i>	ca. 45			FARR, 1918.
„ <i>virginiana</i> L.	19			MANEVAL, 1914.
„ <i>Lennecana</i> HORT. (= <i>precia</i> × <i>denudata</i>). > 50				WEFELSCHIED, 1911.
„ <i>Soulangiana</i> HORT. (= <i>precia</i> × <i>denu-</i> <i>data</i>)	ca. 40			GUIGNARD, 1897.
<i>Liriodendron tulipifera</i> L.	19			MANEVAL, 1914.
<i>Drimys Winteri</i>	ca. 36			STRASBURGER, 1905a.
LAURACEAE				
<i>Cinnamomum Sieboldi</i>	12			TÄCKHOLM & SÖDERBERG, 1917.

RHOEADALES	n	2n	
PAPAVERACEAE			
<i>Chelidonium laciniatum</i>	8		VON BOENICKE, 1911.
„	6		MARCHAL, 1920.
„ <i>Maius</i> L.	8		VON BOENICKE, 1911.
„ <i>Maius</i>	6		WINGE, 1917; MARCHAL, 1920.
„ <i>Maius</i> var. <i>lacini-</i> <i>tum</i>	6		WINGE, 1916.
<i>Papaver nudicaule</i>	7		LJUNDAHL, 1922, 1924.
„ <i>nudicaule</i> L.		14	YASSI, 1927.
„ <i>Rhoeas</i>	7		LJUNDAHL, 1922, 1924.
„ <i>Rhoeas</i> L.	7		TAHARA, 1915e; VILCINO & ABELE, 1927.
„ <i>somniferum</i>	11		LJUNDAHL, 1922.
„ <i>somniferum</i> L.	11		YASUI, 1921.
„ <i>somniferum</i> L. var. <i>glabrum</i> BOIS.		22	TAHARA, 1915e; YASUI, 1927.
„ <i>somniferum</i> L. var. <i>glabrum</i> BOIS. × <i>P.</i> <i>nudicaule</i> L. (F ₁)	6—8+ $\frac{12_1-10_1}{2} \quad \frac{10_1}{2}$	18	YASUI, 1927.
„ <i>somniferum</i> L. var. <i>glabrum</i> BOIS. × <i>P.</i> <i>nudicaule</i> L. (F ₂)	11+ $\frac{5_1-6_1-7_1}{2} \quad \frac{7_1}{2}$		YASUI, 1927.
„ <i>somniferum</i> L. var. <i>glabrum</i> BOIS. × <i>P.</i> <i>nudicaule</i> L.	11 ¹⁾ , $11+\frac{4_1}{2}$		YASUI, 1927.
<i>Corydalis cava</i>	8		TISCHLER, 1928b.
„ <i>pumila</i>		ca. 16 ²⁾	NĚMEC, 1910a.
CAPPARIDACEAE			
<i>Cleome gigantea</i>		ca. 70	UFER, 1927.
„ <i>paradoxa</i>	16		TISCHLER, 1921—22.
„ <i>spinosa</i>		38	TAYLOR, 1925c.
„ <i>spinosa</i> <i>gigas</i>	10		UFER, 1927.
„ <i>spinosa</i> <i>gigas</i>		ca. 38	UFER, 1927.
<i>Capparis acutifolia</i> SWEET.		ca. 85	KUHN, 1928b.
„ <i>cyanophallophora</i> L.		18	„ „
„ <i>saligna</i> VAHL.		30	KUHN, 1928b.

¹⁾ Out of 122 individuals 82 had 11 bivalents, while of the remainder none had more than 4 univalents.

²⁾ The number varied from 12 to 20.

CAPPARIDACEAE (continued)	n	2n	
<i>Capparis</i> (continued)			
<i>Capparis spinosa</i>	12		SCHILLER, 1928.
" <i>spinosa</i> L. var. <i>rupes-</i>		38	KUHN, 1928b.
<i>tris</i> SIBTH. et Sm. .			
CRUCIFERAE			
<i>Iberis amara</i> L.	8		JARETZKY, 1928b.
" <i>pinnata</i>		16	LAIBACH, 1907.
<i>Cochlearia alpina</i>		28	CRANE & GAIRDNER, 1923.
" <i>anglica</i>	49-50	" "	" "
" <i>danica</i>	42	" "	" "
" <i>micacea</i>	34-36	" "	" "
" <i>officinalis</i>	28	" "	" "
" <i>anglica</i> × <i>C. offici-</i>		39-40	" "
<i>nalis</i>			" "
" <i>danica</i> × <i>C. offici-</i>		35-36	" "
<i>nalis</i>			" "
" <i>officinalis</i> × <i>C. an-</i>		39-40	" "
<i>glica</i>			" "
" <i>officinalis</i> × <i>C. da-</i>		35	" "
<i>nica</i>			" "
<i>Alliaria officinalis</i>	ca. 18-20		WINGE, 1917.
<i>Sisymbrium strictissimum</i> . .	8		LAIBACH, 1907.
<i>Sinapis alba</i> L.		18	KARPECHENKO, 1924a ¹).
" <i>arvensis</i> L.		24	" 1924a ¹).
" <i>dissecta</i> LAG.		24	" 1924a ¹).
<i>Brassica alboglabra</i> BAILEY . .		18	" 1928.
" <i>campestris</i> L.	10	16-20	TAKAMINE, 1916.
	10		MORINAGA, 1928.
		20	KARPECHENKO, 1928.
" <i>campestris</i> L. f. „ <i>Abu-</i>			
<i>rana Tohkwase</i> " . .	10		SHIMOTOMAI, 1925.
" <i>campestris</i> L. var. <i>den-</i>			
<i>tata</i> MATSUM. et NA-			
KAI „ <i>Santona</i> " . . .	10		SHIMOTOMAI, 1925.
" <i>cernua</i>	18		MORINAGA, 1928.
" <i>cernua</i> HENSL. „ <i>Ka-</i>			
<i>rashina</i> "	18		SHIMOTOMAI, 1925.
" <i>chinensis</i> L.		20	KARPECHENKO, 1924a ¹).
" <i>chinensis</i> L. „ <i>Shakus-</i>			
<i>hina</i> "	10		SHIMOTOMAI, 1925.
" <i>chinensis</i>	10		MORINAGA, 1928.
	10	20	TERASAWA & SHIMOTOMAI, 1928

¹) In previous list, GAISER (1926) this reference was incorrectly given as KARPECHENKO (1922-3). This is true throughout the Cruciferae wherever KARPECHENKO (1922-3) appeared.

CRUCIFERAE (continued)	n	2n
<i>Brassica</i> (continued)		
<i>Brassica japonica</i> SIEB. „Mizuna”	10	SHIMOTOMAI, 1925.
„ <i>japonica</i>	10	MORINAGA, 1928.
„ <i>juncea</i> Coss. „Okarashi”	18	SHIMOTOMAI, 1925.
„ <i>juncea</i>	18	MORINAGA, 1928; TERASAWA & SHIMOTOMAI, 1928.
„ <i>juncea</i> (?) (Southern curled)		36 KARPECHENKO, 1924a.
„ <i>juncea</i> CZERN. var. <i>seminibus fuscis</i> BATAL		36 KARPECHENKO, 1924a.
„ <i>montana</i> P.		18 ¹⁾ , 19-20 NETROUFAL, 1927.
„ <i>montana</i> (cultivated races)		18 ²⁾ , 19-21 „ „
„ <i>napus</i>	10	GALLÁSTEGUI, 1926.
„ <i>napus</i> L.	16	LAIBACH, 1907.
	18	SHIMOTOMAI, 1925.
		36 KARPECHENKO, 1928.
„ <i>napus</i> L. var. <i>esculenta</i> DC.		36 „ 1924a.
„ <i>napus</i> L. var. <i>oleifera hyemalis</i> „DOLL” . .		36 „ 1924a.
„ <i>napella</i> CHAIX	19	MORINAGA, 1928.
✓ „ <i>oleracea</i> L.	9	WINGE, 1925.
„ <i>oleracea</i> L. var. <i>acephala</i> DC. „Baumkohl, blauer”		18 KARPECHENKO, 1924a.
„ <i>oleracea</i> L. var. <i>acephala</i> DC. „Habotan”	9	SHIMOTOMAI, 1925.
„ <i>oleracea</i> L. var. <i>acephala</i> DC. „Mosbacher”		18 KARPECHENKO, 1924a.
„ <i>oleracea</i> L. var. <i>acephala</i> DC. „Tronchuda”		18 „ „
„ <i>oleracea</i> var. <i>acephala</i>	9	GALLÁSTEGUI, 1926.
✓ „ <i>oleracea</i> L. var. <i>botrytis</i> L. sub. var. <i>cauliflora</i> GARS.		18 KARPECHENKO, 1924a.

¹⁾ 85% of the cells examined showed 18 chromosomes. Of the remainder only one metaphase plate had 20—21 chromosomes.

²⁾ Counts of 18 and > 18 (i.e. 19—20, 21) were in proportion of 95% to 4%.

CRUCIFERAE (continued)	n	2n
<i>Brassica</i> (continued)		
✓ <i>Brassica oleracea</i> L. var. <i>capitata</i> L.		18 KARPECHENKO, 1924b.
„ <i>oleracea</i> L. var. <i>capitata</i> I. f. <i>alba</i> (LAM.) DC.		18-21 ¹⁾ NETROUFAL, 1927.
„ <i>oleracea</i> L. var. <i>capitata</i> „Tamana” . . .	9	SHIMOTOMAI, 1925.
„ <i>oleracea</i> var. <i>capitata</i> .	9	GALLÁSTEGUI, 1926.
✓ „ <i>oleracea</i> L. var. <i>gemmifera</i> DC.		18 KARPECHENKO, 1924a.
„ <i>oleracea</i> L. var. <i>gemmifera</i> ZENK. „Komochitamana” . . .	9	SHIMOTOMAI, 1925.
„ <i>oleracea</i> L. var. <i>gongyloides</i> L.		18 KARPECHENKO, 1924a.
„ <i>oleracea</i> L. var. <i>Sabauda</i> L.	9	18 „ 1924a. 18 „ 1924b. 18-21 ¹⁾ NETROUFAL, 1927.
„ <i>oleracea</i> L. prol. <i>napus</i> L. var. <i>hongnoensis</i> LEVEILLE 1912. . .		18 KARPECHENKO, 1924a'
„ <i>oleracea</i> (nabicol) . .		18 GALLÁSTEGUI, 1926.
„ <i>pekinensis</i>	10	MORINAGA, 1928.
„ <i>pekinensis</i> RUPR. (= <i>B. Ptsai</i> BAILEY f. CHOSENHAKUSAI) . .	10	SHIMOTOMAI, 1925.
„ <i>campestris</i> × <i>B. juncea</i> F ₁	$10 + \frac{8_1}{2}$ ²⁾	TERASAWA & SHIMOTOMAI, 1928
„ <i>cernua</i> × <i>B. chinensis</i>	$10 + \frac{8_1}{2}$	MORINAGA, 1928.
„ <i>cernua</i> × <i>B. japonica</i>	$10 + \frac{8_1}{2}$	„ „
„ <i>cernua</i> × <i>B. Rapa</i>	$10 + \frac{8_1}{2}$	„ „
„ <i>chinensis</i> × <i>B. Napella</i>	$10 + \frac{9_1}{2}$	„ „
„ <i>chinensis</i> × <i>B. pekinensis</i>	10	„ „

¹⁾ A single plate was seen in each case showing ca. 38 chromosomes.

²⁾ In the homoetypic division, after univalents have divided, 16—22 chromosomes appeared on the plates.

CRUCIFERAE (continued)	n	2n	
<i>Brassica</i> (continued)			
<i>Brassica japonica</i> × <i>B. pekinensis</i>	10		MORINAGA 1928.
„ <i>japonica</i> × <i>B. Rapa</i>	10		„ „
„ <i>juncea</i> × <i>B. pekinensis</i>	$10 + \frac{8_1}{2}$		„ „
„ <i>Napella</i> × <i>B. chinensis</i>	$10 + \frac{9_1}{2}$		„ „
„ <i>Napella</i> × <i>B. japonica</i>	$10 + \frac{9_1}{2}$		„ „
„ <i>Napella</i> × <i>B. pekinensis</i>	$10 + \frac{9_1}{2}$		„ „
„ <i>Napella</i> × <i>B. Rapa</i>	$10 + \frac{9_1}{2}$		„ „
„ <i>pekinensis</i> × <i>B. japonica</i>	10		MORINAGA, 1928; TERASAWA & SHIMOTOMAI, 1928.
„ <i>pekinensis</i> × <i>B. Napella</i>	$10 + \frac{9_1}{2}$		MORINAGA, 1928.
„ <i>pekinensis</i> × <i>B. Rapa</i>	10		„ „
„ <i>Rapa</i> × <i>B. chinensis</i>	10		„ „
„ <i>Rapa</i> × <i>B. juncea</i>	$10 + \frac{8_1}{2}$		„ „
„ <i>Rapa</i> × <i>B. Napella</i>	$10 + \frac{9_1}{2}$		„ „
„ <i>Rapa</i> × <i>B. pekinensis</i>	10		„ „
„ <i>chinensis</i> × <i>Raphanus sativus</i> F ₁	$28_1^{1)}$		TERASAWA & SHIMOTOMAI, 1928
„ <i>chinensis</i> × <i>Raphanus sativus</i> F ₂		17-18, 20, 22-25, 33-35	TERASAWA & SHIMOTOMAI, 1928
„ <i>chinensis</i> × <i>Raphanus sativus</i> F ₃		21-24, 26, 30, 31, 34, 36, 44	TERASAWA & SHIMOTOMAI, 1928
<i>Raphanus raphanistrum</i> L.		18	KARPECHENKO, 1924a, 1928.
„ <i>sativus</i>	16		KLEINMAN, 1923.
		18	TERASAWA & SHIMOTOMAI, 1928

¹⁾ Usually all chromosomes appeared unpaired in the heterotypic division.

CRUCIFERAE (continued)	n	2n	
<i>Raphanus</i> (continued)			
<i>Raphanus sativus</i> L.	9	18	KARPECHENKO, 1924b.
		18	" 1928.
" <i>sativus</i> L. prol. <i>niger</i>			
PERS.		18	" 1924a.
" <i>sativus</i> L. prol. <i>olei-</i>			
<i>ferus</i> METZG.		18	" 1924a.
" <i>sativus</i> L. prol. <i>radi-</i>			
<i>cula</i> PERS.		19	" 1924a.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₁ (sterile) ¹⁾	$\frac{18_1}{2}$	18	" 1927a.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₁ (fer-			
tile) ²⁾	$\frac{18_1, 19_1-20_1}{2}$	18	" 1927a.
	$\frac{36_1, 35_1-32_1}{2}$		
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₁ × <i>Ra-</i>			
<i>phanus sativus</i> . .		27, 28-29	" 1927a.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ ³⁾ . . .		27 or	
		27-29,	
		36 or	
		36-38,	
		45 or	
		40-42,	
		51-53	" 1927a.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₁	$\frac{18_1^4}{2}$	18	" 1928.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (triploid) 9 + 9 ₁ ⁵⁾		27	" 1928.
	$\frac{2}{2}$		

¹⁾ As these hybrids in 1923 were sterile it was assumed that gametes formed with 9 or ca. 9 chromosomes played no part in the production of offspring.

²⁾ Investigations made in 1924 when these same hybrids showed partial fertility when cultivated along with *Raphanus* and *Brassica* plants gave evidence of increased chromosome number and possible formation of polyploid gametes.

³⁾ As no progeny showed increase of cabbage characters, it was assumed that crosses with cabbage did not take place but rather with *Raphanus*.

⁴⁾ Instead of tetrads, groups of cells containing from 6 to 12 chromosomes formed.

⁵⁾ Meiotic division was very irregular, the first division of chromosomes being sometimes entirely omitted. One set each of *Raphanus* and *Brassica* chromosomes supposedly form 9 bivalents + extra *Raphanus*.

CRUCIFERAE (continued)	n	2n	
<i>Raphanus</i> (continued)			
<i>Raphanus sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (tetra- ploid)	18 ¹⁾	36	KARPECHENKO, 1928.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (penta- ploid)	9 + $\frac{27}{2}$ ²⁾	45	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (hypo- hexaploid)	25, 27, ca. 31 ³⁾	51	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (hyper- triploid)	19 ⁴⁾	29	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (hypo- pentaploid).	23 ⁵⁾	41	" "
" × <i>sativus</i> <i>Brassica</i>			
<i>oleracea</i> F ₂ (Hybrid 7-13)	19, 20	36	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> F ₂ (Hybrid 7-150)	19	36	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (triploids inter se)		18-24 ⁶⁾	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (triploid × <i>Raphanus sativus</i>		18	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (tetraploids inter se)		36	" "

¹⁾ Divisions were regular, two sets each of *Raphanus* and *Brassica* forming 18 bivalents.

²⁾ Two sets of *Raphanus* chromosomes were considered to have formed 9 bivalents, while the third set of *Raphanus* + the two sets of *Brassica* chromosomes formed the 27 univalents.

³⁾ It is supposed that two sets of *Raphanus* + 2 sets of *Brassica* chromosomes formed 18 bivalents and the remainder, perhaps 9 of *Brassica* + 6 of *Raphanus*, formed 15 univalents.

⁴⁾ It is assumed that this complex was formed from a *Raphanus* gamete (n = 9) and an F₁ gamete with 20 chromosomes = 10B + 10R.

⁵⁾ The character of meiosis remained the same as in the pentaploid but with less univalents.

⁶⁾ The majority had 18 chromosomes.

CRUCIFERAE (continued)	n	2n	
<i>Raphanus</i> (continued)			
<i>Raphanus sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (hypohe- xaploid progeny) . .		40-43	KARPECHENKO, 1928.
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (hypopen- taploid)		39-41	" "
" <i>sativus</i> × <i>Brassica</i>			
<i>oleracea</i> (triploid × hypohehexaploid = hypoenneaploid) .		78	" "
" <i>sativus radicle</i> ×			
<i>Brassica oleracea ca-</i> <i>pitata</i> f. <i>rubra</i> F . .	$4-8 + 10_1 - 2_1, 18$ $\frac{2}{2} \frac{2}{2}$		PIECH & MOLDENHAWER, 1927.
	10-18 ¹⁾		
<i>Lunaria annua</i> (= <i>biennis</i>) . .		24	LAIBACH, 1907.
<i>Capsella</i> (= <i>Bursa bursa pasto-</i> <i>ris</i>)	16		" "
		32	ROSENBERG, 1904b.
<i>Bursa bursa-pastoris</i> (L.) BRIT-			
TON.	16	32	HILL, 1927.
	16		" given by SHULL, 1929.
" <i>bursa-pastoris apetala</i>			
OPIZ	16		" 1927; HILL given by SHULL, 1929.
" <i>djurdjurae</i> SHULL . . .	16		HILL, given by SHULL, 1929.
" <i>grandiflora</i> BOIS. . . .	8	16	" 1927.
	8		" given by SHULL, 1929.
<i>Capsella Heegeri</i>	16		MARCHAL, 1920.
" <i>Heegeri</i> SOLMS-LAU-			
BACH	16		HILL, given by SHULL, 1929.
<i>Bursa occidentalis</i> SHULL . . .	16		" 1927; HILL, given by SHULL, 1929.
" <i>occidentalis</i> subsp. <i>Ma-</i> <i>deirae</i> SHULL	16		HILL, given by SHULL, 1929.
" <i>orientalis</i> SHULL	16		" 1927; HILL, given by SHULL, 1929.
" <i>rubella</i> REUT.	8		HILL, 1927; HILL, given by SHULL, 1929.
" <i>tuscaloosae</i> SHULL . . .	8		HILL, 1927; HILL, given by SHULL, 1929.

¹⁾ In interkinesis the chromosome number is usually 13—15 but may vary from 10—18.

CRUCIFERAE (Continued)	n	2n	
<i>Capsella</i> (= <i>Bursa</i>) <i>Viguieri</i>	8		MARCHAL, 1920.
<i>Bursa</i> <i>Viguieri</i> BLARINGHEM	8		HILL, 1927; HILL, given by SHULL, 1929.
<i>Camelina sativa</i> L. CRANTZ			
subsp. <i>Alyssum</i> (MILLER)			
THELLUNG	21 ¹⁾		JARETZKY, 1928a.
<i>Neslia paniculata</i> DESV.	7		" "
<i>Draba alpina</i> L. probably			
	32		HEILBORN, 1927.
" <i>borealis</i> DC. ²⁾	40		" "
" <i>cacuminum</i> ELIS. EKM. . . ca. 30			" "
" <i>condensata</i> (LANGE) ³⁾	32		" "
" <i>daurica</i> DC.	16		JARETZKY, 1928b.
" <i>fladnizensis</i> WULF.	8		HEILBORN, 1927.
" <i>incana</i> L.	16		" "
<i>Draba incana</i> L. f. <i>hebecarpa</i>			
LINDBL. ⁴⁾	16		HEILBORN, 1927.
" <i>Magellanica</i> LAM. subsp.			
<i>borea</i> ELIS. EKM. ⁵⁾	32		" "
" <i>Magellanica</i> LAM. subsp.			
<i>borea</i> ELIS. EKM. var.			
<i>lutescens</i> ELIS. EKM.	32		" "
" <i>Magellanica</i> LAM. subsp.			
subsp. <i>cinera</i> (ADAMS)			
ELIS. EKM.	40		" "
" <i>Magellanica</i> LAM. subsp.			
<i>cinera</i> (ADAMS) ELIS.			
EKM. var. <i>dovreensis</i> (F ₁)			
ELIS. EKM.	32		" "
" <i>Magellanica</i> LAM. subsp.			
<i>cinera</i> (ADAMS) ELIS.			
EKM. var. <i>brachysili-</i>			
<i>qua</i> (MELA) ELIS. EKM.	24		" "
" <i>Magellanica</i>	32 ⁶⁾		" (1926), 1929.
	40 ⁷⁾		" " "
	24 ⁸⁾		" " "

¹⁾ Considerable irregularity in the heterotypic division was found.

²⁾ This plant is considered as belonging to the *D. unalaschiana* group.

³⁾ This is a "condensata"-form of *D. Magellanica borea*.

⁴⁾ Plants from two different regions were examined.

⁵⁾ Specimens from three different places were examined.

⁶⁾ Most of the forms of *D. Magellanica* had 32 chromosomes.

⁷⁾ Two forms of *D. Magellanica*, one from Spitzbergen and one from Greenland, had 40.

⁸⁾ One form of *D. Magellanica* from Finland had 24 chromosomes.

CRUCIFERAE (continued)	n	2n	
<i>Draba nivalis</i> LILJEBL.	8		HEILBORN, 1927.
<i>Draba rupestris</i> R. Br. LINDBL.			
f. <i>leiocarpa</i>	24 ¹⁾	"	"
<i>rupestris</i> R. Br. LINDBL.			
f. <i>hebecarpa</i>	24 ²⁾	"	"
<i>rupestris</i>	24	"	(1926), 1929.
cf. <i>unlaschkiana</i> DC.	40	"	1927.
<i>gladnizensis</i> × <i>nivalis</i> (= <i>D. curtisiliqua</i> ZETT.)	8	"	"
<i>Erophila cochleoides</i>		12 ³⁾	BANNIER, 1923.
	7		WINGE, 1925, 1926.
<i>confertifolia</i>		24 ³⁾	BANNIER, 1923.
	15		WINGE, 1925, 1926.
<i>violacea-petiolata</i>		12 ³⁾	BANNIER, 1923.
	ca. 35		WINGE, 1925.
	32	"	"
<i>Aubrietia Columnae</i> GUSS.	8		JARETZKY, 1928a.
<i>deltoides</i> (L.) DC.	8	"	"
<i>edentula</i> BOISS.	8	"	"
<i>Libanotica</i> BOISS.	8	"	"
<i>Stenophragma Thalianum</i>		10	LAIBACH, 1907, GRÉGOIRE 1912.
	5		WINGE, 1925.
<i>Thalianum</i> CELAK.	5		JARETZKY, 1928a.
<i>Turritis glabra</i> L.	16	"	"
<i>Arabis albida</i> STEV.	8	"	"
<i>alpina</i> L.	8	"	"
<i>bellidifolia</i> JACQ.		16	"
<i>hirsuta</i> SCOP.	16	"	"
<i>muralis</i> BERTOLONI sub- sp. <i>collina</i> (TEN.) THEL- LUNG var. <i>rosea</i> DC.	8	"	"
<i>procurrens</i> WALDST et KIT.	8	"	"
<i>pumila</i> WULF.	8	"	"
<i>sicula</i> HUET.	8	"	"
<i>turrita</i> L.	8	"	"
<i>sp.</i> (?)	16	"	"

¹⁾ In a second plant from another region, 22—25 chromosomes were counted, n = probably 24.

²⁾ Plants from three different regions were examined.

³⁾ In previous list, GAISER (1926), these numbers were incorrectly given in the haploid column.

CRUCIFERAE (continued)		n	2n	
<i>Cordaminopsis Halleri</i> (L.)				JARETZKY, 1928a.
HAYCK.	8		" "	
<i>Erysimum cheiranthoides</i> L. . .	8		" "	
" <i>helveticum</i> (JACQ.)				
DC.	24		" "	
" <i>hieraciifolium</i> L. . .		ca. 32	" "	
" <i>ochroleucum</i> DC. . .	ca. 16		" "	
" <i>silvestre</i> (CRANTZ) .				
KERNER	24		" "	
<i>Cheiranthus Cheiri</i> L.	7	14	" "	
<i>Alyssum Arduini</i> (= <i>saxatile</i>) .	8	16	LAIBACH, 1907.	
" <i>Arduini</i> (= <i>saxatile</i>				
L.)	8		JARETZKY, 1928a.	
" <i>calycinum</i> L.	16		" "	
" <i>corymbosum</i> GRIESE-				
BACH	8		" "	
" <i>edentulum</i> WALDST. et				
KIT.	8		" "	
" <i>Murale</i> (argenteum) .	8	16	LAIBACH, 1907.	
" <i>Wierzbikii</i>	8	16	" "	
<i>Clypeola Jonihlaspi</i> L. subsp.				
<i>Glaudini</i> (TRACHSEL) THEL-				
LUNG	16		JARETZKY, 1928a.	
<i>Lobularia maritima</i> L.	12		" "	
<i>Berteroa incana</i> DC.	8		" "	
<i>Malcolmia africana</i>	7		" "	
" <i>maritima</i>	7		" "	
<i>Hesperis matronalis</i> L.	14		" "	
" <i>tristis</i> L.	14		" "	
<i>Matthiola incana</i>	7	14	ALLEN, I. 1924; CORNER, 1927.	
	7		JARETZKY, 1928a.	
" <i>incana</i> (mutants) . .	7+1 ¹⁾		FROST & MANN, 1924.	
	7+2 ²⁾		" " " " "	
	2			
" <i>incana</i> R.Br. „Snow-				
flake”	7		FROST, 1927; LESLEY & FROST,	
			1928.	
	7	14	LESLEY & FROST, 1927.	
" <i>incana</i> R.Br. (pure				
single variety). . .	7	14	" " " "	

¹⁾ The trisomic mutants observed in 1924 were large, crenate and slender.

²⁾ The tetrasomic mutants observed in 1924 were large, slender, and large crenate. Extreme slender might be either trisomic or tetrasomic.

CRUCIFERAE (continued)	n	2n	
<i>Matthiola</i> (continued)			
<i>Matthiola incana</i> R. BR. var.			
„ „Snowflake” . . .	8 ¹⁾		LESLEY & FROST, 1927.
„ <i>incana</i> R. BR. var.			
„ „Snowflake” (pure single variety) 7 ₁ & 7 ₂ 7 + 1 ₁ ²⁾			„ „ „ „
„ <i>incana</i> R. BR. „Snow flake” (small) . . .	7 + 1 ₁		„ „ „ „
„ <i>incana</i> R. BR. „Snow- flake” (extremely small)	7 + 2 ₁ 2		„ „ „ „
„ <i>incana</i> L. BR. „Snow- flake” (mutants) . 8 ³⁾ , 9 ⁴⁾ ,			
	10 ⁵⁾		FROST, 1927.
<i>Bunias crucago</i> L.	7		JARETZKY, 1928a.
„ <i>orientalis</i> L.	7 S ₃ ⁶⁾	42	„ „
<i>Coringia orientalis</i> (L.)			
DUMONT.	7		„ „
SARRACENIALES			
SARRACENIACEAE			
<i>Sarracenia purpurea</i>	12		SHREVE, 1906.
„ <i>rubra</i>	12		NICHOLS, 1908.
„ <i>variolaris</i>	12		„ „
DROSERACEAE			
<i>Drosera capensis</i>		36-38	HEITZ, 1926.
„ <i>filiformis</i>	10		LEVINE, 1916.
„ <i>longifolia</i>	20		ROSENBERG, 1904a.
	20	40	„ 1903, 1909d.
„ <i>pygmaea</i>		20-(22)	HEITZ, 1926.
„ <i>rotundifolia</i>	8		HUIE, 1897, 1899, PETERS, 1897, ROSENBERG, 1899.
	10		ROSENBERG, 1904a; PACE, 1912
	10	20	„ 1903, 1909d.

¹⁾ Mutant forms of variety „Snowflake” were found to be trisomic.

²⁾ The first metaphase chromosomes of F₁ were short, and of the F₂, long.

³⁾ The list of trisomic mutants in 1927 with n + 1₁ = 8 chromosomes was: Smooth, Crenate, Crenatoid (there was no cytological difference between the two latter), Narrow, Dark, Small, Small-Smooth, Slender, Large and Convex. In Small, Slender and Large the extra chromosome is evidently a fragment of a normal chromosome.

⁴⁾ The mutants with n + 2₁ = 9 chromosomes were: Extreme Large and Extreme Smooth; and the mutants with n + 1₁ + 1₁ = 9 chromosomes were: Extreme Large, Large Slender, Crenate Slender, Crenate Large, and Large Smooth.

⁵⁾ The one mutant with n + 1₁ + 2₁ = 10 chromosomes was Large Extreme Slender.

⁶⁾ S₃ means „dreiwertige Sammelchromosomen”, i.e., each is the equivalent of 3 somatic chromosomes.

DROSERACEAE (continued)	n	2n	
<i>Drosera</i> (continued)			
<i>Drosera spatulata</i>		ca. 72	HEITZ, 1926.
" <i>rotundifolia</i> × <i>longifolia</i> (= <i>D. obovata</i>)	$\frac{10+20}{2}$	30	ROSENBERG, 1903, 1904a, 1909d.
ROSALES			
PODOSTEMACEAE			
<i>Podostemon subulatus</i> GARDN.		ca. 40	WENT, 1910.
<i>Lawia zeylanica</i> TUL.	10		MAGNUS, 1913.
<i>Oenone Imthurni</i>	ca. 12-14		WENT, 1910.
" <i>Versteegiana</i>	ca. 8		" 1926.
<i>Mourera fluviatilis</i>	ca. 14		" 1910.
HYDROSTACHYACEAE			
<i>Hydrostachys imbricatus</i>	10-12		PALM, 1915.
CRASSULACEAE			
<i>Bryophyllum calycinum</i> SALISB.		40(38?)	TAYLOR, 1926.
<i>Penthorum sedoides</i> L.	8		ROCÉN, 1928.
SAXIFRAGACEAE			
<i>Saxifraga granulata</i>	> 30		JUEL, 1907.
	16		SCHÜRHOFF, 1925a; MARSDEN-JONES & TURRILL, 1928.
" <i>rosacea</i>	16		MARSDEN-JONES & TURILL, 1928.
" <i>sponhemica</i>	ca. 15		PACE, 1912.
" <i>rosacea</i> × <i>S. granulata</i> F ₁	16		MARSDEN-JONES & TURRILL, 1928.
" <i>rosacea</i> × <i>S. granulata</i> F ₂	32 ¹⁾		MARSDEN-JONES & TURRILL, 1928.
<i>Parnassia palustris</i>	10		PACE, 1912.
<i>Francoa appendiculata</i>	ca. 20		GAUMANN, 1919.
<i>Philadelphus coronarius</i>	10		V. D. ELST, 1909.
RIBES²⁾			
Section Berisia			
<i>Ribes orientale</i> ♀ DESF. ³⁾		16	MEURMAN, 1928.
" <i>saxatile</i> ♂ PALL. ³⁾		16	" "

¹⁾ Reduction divisions were very irregular.

²⁾ MEURMAN does not state whose sectional classification he is using. It does not follow ENGLER & PRANTL. According to TISCHLER (1926) 1929 it follows SANCZEWSKI (1907).

³⁾ MEURMAN found no evidence of heterochromosomes when carefully comparing the 8 pairs of chromosomes in these dioecious species.

SAXIFRAGACEAE (continued)	n	2n	
RIBES (continued)			
Section Ribesia			
Subsection Symplocalyx			
<i>Ribes aureum</i> ¹⁾	8		TISCHLER, 1927a, (1926), 1929.
„ <i>aureum</i> PURSH. ²⁾	8	16	„ 1927b; MEURMAN, 1928.
„ <i>aureum</i> var. <i>chrysococcum</i> RYDB.	8	16	MEURMAN, 1928.
„ <i>odoratum</i> WENDL.	8	16	„ „
Subsection Calobotrya			
<i>Ribes sanguineum</i> ¹⁾	8		TISCHLER, 1927a, (1926), 1929.
„ <i>sanguineum</i> PURSH. ²⁾	8	16	TISCHLER, 1927b; MEURMAN, 1928.
		16 & 32 ³⁾	TISCHLER, 1927b.
Subsection Eucoreosoma			
<i>Ribes americana</i> MILL. ⁴⁾	8	16	MEURMAN, 1928b.
„ <i>nigrum</i>		16 ⁵⁾	TISCHLER, 1927a; DARLINGTON 1927a.
	8		TISCHLER, (1926), 1929.
„ <i>nigrum</i> L. ⁴⁾	8	16	MEURMAN, 1928.
Subsection Ribesia			
<i>Ribes multiflorum</i> KIT.	8	16	MEURMAN, 1928.
„ <i>rubrum</i>	8		TISCHLER, (1926), 1929.
„ <i>rubrum</i> L.	8	16	MEURMAN, 1928.
Grossularioides			
<i>Ribes lacustre</i>	8		TISCHLER, (1926), 1929.
„ <i>lacustre</i> POIR.	8	16	MEURMAN, 1928.
Grossularia			
<i>Ribes leptanthum</i> GRAY	8	16	MEURMAN, 1928.
„ <i>oxyacanthoides</i>		16 ⁵⁾	DARLINGTON, 1927a.
„ <i>oxyacanthoides</i> var. <i>Purpusii</i> KOEHNE	8	16	MEURMAN, 1928.

¹⁾ TISCHLER, (1926) 1929 found the nuclei of *R. sanguineum* to be larger than those of *R. aureum*. Then TISCHLER (1927b, 1928a) described the chromosomes of the former species as being larger than those of the latter, and this difference was recognizable in the hybrid *R. Gordonianum*. MEURMAN (1928) found greater differences between the chromosomes of any one species than between those of the two species.

²⁾ One or two lagging chromosomes were observed by MEURMAN (1928) in these „and some other species.”

³⁾ Syndiploid nuclei were found.

⁴⁾ Irregularities in meiotic divisions occurred to the greatest extent in these two of all the species studied by MEURMAN (1928).

⁵⁾ DARLINGTON (1927a) found one pair of chromosomes to have satellites. Root-tips from normal and reverted plants of *Ribes nigrum* show similar groups of 16 chromosomes.

SAXIFRAGACEAE (continued)	n	2n	
RIBES (continued)			
<i>Ribes grossularia</i>	8		TISCHLER, 1927a, (1926) 1929. 16 ¹⁾ DARLINGTON, 1927a.
Section (?) ²⁾			
<i>Ribes alpinum</i> L.	8		MEURMAN, 1925a, 1925b.
" <i>alpinum</i>	8		TISCHLER, (1926), 1929.
" <i>petraeum</i>	8		TISCHLER, 1927a, (1926) 1929.
" sp. (?) „Whitesmith”			
Gooseberry var.		16 ¹⁾	DARLINGTON, 1927a.
" <i>Carrierei</i> SCHNEID. (=			
<i>R. glutinosum</i> × <i>R. ni-</i>		16	MEURMAN, 1928.
<i>grum</i>)			
" <i>Culverwellii</i> Mac FARL.			
(= <i>R. nigrum</i> × <i>R. gros-</i>			
<i>sularia</i>)	$1 + 14\frac{1}{2}, 4 + 8\frac{1}{2}$	16	" "
	$\frac{2}{2}$		
<i>Ribes Gordonianum</i> LEM. (= <i>R.</i>			
<i>sanguineum</i> PURSH. ×			
<i>R. aureum</i> PURSH.)	8		TISCHLER, 1906, 1928a.
	ca. 12 ³⁾		" 1921-22.
	$16\frac{1}{2}$	16	" 1927b.
	$\frac{2}{2}$		
	$8 + 0, 0 + 16\frac{1}{2}$	16	MEURMAN, 1928.
	$\frac{2}{2}$		
<i>Ribes holosericeum</i> OTTO. S.			
DIETR. (= <i>R. rubrum</i> ×			
<i>R. petraeum</i>)	8	16	" "
" <i>innominatum</i> JANCZ. ⁴⁾			
(= <i>R. divaricatum</i> × <i>R.</i>			
<i>grossularia</i>).		16	" "
" <i>intermedium</i> CARR. (= <i>R.</i>			
<i>album</i>) <i>sanguineum</i> ×			
<i>R. nigrum</i>)	8	16	TISCHLER, 1906.
	12 ³⁾		" 1921-22.
" <i>pallidum</i> (<i>R. rubrum</i> ×			
<i>R. petraeum</i>)	10 ⁵⁾		HIMMELBAUR, 1912.

¹⁾ DARLINGTON (1927a) found one pair of chromosomes to have satellites. Roottips from normal and reverted plants of *Ribes nigrum* show similar groups of 16 chromosomes.

²⁾ The following species were not classified under sections.

³⁾ TISCHLER (1927a) stated these numbers were incorrect and confirmed the chromosome numbers determined in 1906.

⁴⁾ A few lagging univalents were seen in meiotic divisions of these hybrids.

⁵⁾ Eleven chromatin bodies were seen in a stage of diakinesis, but one was thought to be the nucleolus.

SAXIFRAGACEAE (continued)	n	2n	
<i>Ribes</i> (continued)			
<i>Ribes robustum</i> JANCZ. (= <i>R. niveum</i> × ? <i>inermis</i>) . .	8	16	MEURMAN, 1928.
„ <i>succirubrum</i> LABEL ¹⁾ (= <i>R. niveum</i> × <i>R. divaricatum</i>)		16	„ „
„ <i>urceolatum</i> TAUSCH. (= <i>R. multiflorum</i> × <i>R. petraeum</i>)		16	„ „
BRUNIACEAE			
<i>Staavia glutinosa</i> THUNB. . . .	8		SAXTON, 1910.
PLATANACEAE			
<i>Platanus acerifolia</i>	10-11		BRETZLER, 1924.
„ <i>orientalis</i> (= <i>acerifolia</i>)	21		WINGE, 1917.
„ <i>occidentalis</i>	10-11		BRETZLER, 1924.
	8	16	BROUWER, 1924.
„ <i>orientalis</i>	10-11		BRETZLER, 1924.
	8	16	BROUWER, 1924.
ROSACEAE			
<i>Cydonia oblonga</i> ²⁾	17		KOBEL, 1926b.
„ <i>oblonga</i> MILL.		34	RYBIN, 1926.
„ <i>oblonga</i> MILL. ²⁾ (= <i>C. vulgaris</i> PERS.) var. Beretzky	17		KOBEL, 1927.
„ <i>oblonga</i> MILL. (= <i>C. vulgaris</i> PERS.) var. Mammuth	17		„ „
„ <i>Japonica</i> ²⁾	17		„ 1926b.
<i>Chaenomeles japonica</i> LINDL. ²⁾ .	17		„ 1927.
„ <i>Maulei</i> C. K. SCHNEIDER ²⁾ . .	17		„ „
<i>Pirus communis</i> L.	4		OSTERWALDER, 1910.
		34	RYBIN, 1926.
„ <i>communis</i> var. <i>Alexander Lucas</i> ³⁾		ca. 46	FLORIN, 1927.
„ <i>elaeagnifolia</i> PALL. ⁴⁾ . .		34	RYBIN, 1926.
„ <i>salicifolia</i> PALL. ⁴⁾ . . .	17		KOBEL, 1927.
„ <i>sinensis</i> LDL. ⁴⁾ (= <i>P. ussuriensis</i> MAXIM. . .	17		„ „

¹⁾ A few lagging univalents were seen in meiotic divisions of these hybrids.

²⁾ KOBEL (1928) states that *Cydonia japonica*, *Maulei*, and *oblonga* are diploid.

³⁾ In heterotypic metaphase plates all chromosomes have not united as gemini. Division is irregular and many micronuclei are formed.

⁴⁾ KOBEL (1928) refers to these species as being diploid.

ROSACEAE (continued)	n	2n	
<i>Pirus ussuriensis</i> MAXIM.		34	RYBIN, 1926.
„Kulturbirne” (Normal)	17		KOBEL, 1926b.
<i>Pirus</i> sp. (?) (Cultivated Races)			
<i>Amanlis Butterbirne</i>	$\frac{46_1}{2}$		„ 1927.
<i>Andre Desportes</i>	$16+3_1, 17+1_1$		„ 1926a.
	$\frac{17}{2}$		„ 1927.
<i>Barikerbirne</i>	$47_1^{1)}$		KOBEL, 1926a.
	$\frac{2}{2} 34+8_1-17_1$		„ 1926b.
	51_1		„ 1927.
	$\frac{2}{2}$		
<i>Diels Butterbirne</i>	45_1		„ „
	$\frac{2}{2} 34+8_1-17_1$		„ 1926b.
<i>Fondante Thirriot</i>	17		„ 1927.
<i>Frühe von Trévoux</i>	17		„ „
<i>Gellerts Butterbirne</i> (= Beur- <i>ré</i> HARDY)	$16+1_1$		„ 1926a.
	17		„ 1926b, 1927.
<i>Gute Luise von Avrenches</i>	17		„ 1927.
<i>Hardenponte Butterbirne</i>	17		„ „
<i>Hofratsbirne</i> (= <i>Conseiller à</i> <i>la cour</i>)	$\frac{44_1-48_1}{2}$		„ „
<i>Knollbirne</i>	$19-21^{2)}$		„ „
<i>Lebrun's Butterbirne</i>	17		„ „
<i>Neue Poiteau</i>	17		„ „
<i>Pastorenbirne</i> (= <i>Poirre Curé</i>)	$32^{3)}$		„ 1926a.
	$55_1 34+8_1-17_1$		„ 1926b, 1927.
	$\frac{2}{2}$		„ 1927.
<i>Schweizer-Wasserbirne</i>	ca. $\frac{47_1}{2}$		„ „
<i>Theilersbirne</i>	at least		
	$23^{4)}$		„ 1926a.
	$34+8_1-17_1$		„ 1926b, 1927.
	48_1		„ 1927.
	$\frac{2}{2}$		

¹⁾ The best anaphase figure for determining the number of chromosomes showed groups of 21 and 22 chromosomes + 4 others. It was considered that the total number might be 48.

²⁾ An exact determination could not be made.

³⁾ Thirty-two chromosomes were usually counted on the heterotypic plates but oftentimes as many as 35 were distinguished.

⁴⁾ The heterotypic plates showed 24 to 27 chromosomes and the homoeotypic plates 23 to 29.

ROSACEAE (continued)	n	2n	
<i>Pirus</i> (continued)			
<i>Vereins Deschantsbirne</i> (=			
<i>Doyenné du Commice</i>) . . .	16+1 ₁		KOBEL, 1926a.
	17		„ 1926b, c, 1927.
<i>Williams Christbirne</i> (=			
<i>Bartlettbirne</i>)	16+2 ₁		„ 1926a.
	$\frac{2}{2}$		
	17		„ 1926b, c, 1927.
<i>Pirus malus</i> var. <i>Antonovka</i> .	17	34	RYBIN, 1927a.
„ <i>malus</i> var. <i>Antonovka Ka-</i>			
<i>menitchka</i>		34	„ „
„ <i>malus</i> var. <i>Aport</i>		34	„ „
„ <i>malus</i> var. <i>Astrachan</i>			
<i>White</i>	17	34	„ „
„ <i>malus</i> var. <i>Weisser As-</i>			
<i>trachan</i>	17		KOBEL, 1927.
„ <i>malus</i> var. <i>Vit Astrakan</i> .	17, 0-11+		
	$\frac{34_1-0_1}{2}$		HEILBORN, 1928b.
„ <i>malus</i> var. <i>Babuskindo</i> . .		34	RYBIN, 1927a.
„ <i>malus</i> var. <i>Belleflower</i>			
<i>Yellow</i>		34	„ „
„ <i>malus</i> var. <i>Belleflower</i> ×			
<i>Kitaika of Mitchurin</i> . .		34	„ „
„ <i>malus</i> var. <i>Barlovskoje</i> . .		34	„ „
„ <i>malus</i> var. <i>Belvi Naliv</i> .	17	34	„ „
„ <i>malus</i> var. <i>Canadian Rei-</i>			
<i>nette</i>		15	„ „
„ <i>malus</i> var. <i>Kanada Rei-</i>			
<i>nette</i>	$\frac{38_1-40_1}{2}$		KOBEL, 1927.
„ <i>malus</i> var. <i>Calville du roi</i>		34	RYBIN, 1927a.
„ <i>malus</i> var. <i>Candille Sinap</i>		34	„ „
„ <i>malus</i> var. <i>Charlamowsky</i>	17, 16+2 ₁ ,		HEILBORN, 1928b.
	$\frac{2}{2}$		
	$\frac{15+4_1, 10+13_1}{2}$		
„ <i>malus</i> var. <i>Dash-Alma</i> . .		34	RYBIN, 1927a.
„ <i>malus</i> var. <i>Delicious</i> . .	14		SHOEMAKER, 1926.
„ <i>malus</i> var. <i>Djir-Hadzhi</i> .		34	RYBIN, 1927a.
„ <i>malus</i> var. <i>Golden Rei-</i>			
<i>nette of Kursk</i>		34	„ „
„ <i>malus</i> var. <i>Gravensteiner</i> ca.	19+7 ₁		HEILBORN, 1928b.
	$\frac{2}{2}$		

ROSACEAE (continued)

n

2n

Pirus (continued)

		at least	
		24 ¹⁾	KOBEL, 1926a.
		34+8 ₁ -17 ₁	" 1926b.
		45 ₁ -46 ₁ ²⁾	" 1927.
		$\frac{45+46}{2}$	
<i>Pirus malus</i> var. <i>Gul Richard</i>			
(Gelber Richard) . . .	17		HEILBORN, 1928b.
" <i>malus</i> var. <i>Gule-Penbe</i> .		34	RYBIN, 1927a.
" <i>malus</i> var. <i>Hampus</i> . .	17, 16+2 ₁		
	$\frac{17+16+2}{2}$		
	4-5+26 ₁ -24 ₁		HEILBORN, 1928b.
	$\frac{4+5+26+24}{2}$		
" <i>malus</i> var. <i>Lord Grosve-</i>			
<i>nor</i>		34	RYBIN, 1927a.
" <i>malus</i> var. <i>Oranie</i> . . .	17		HEILBORN 1928b.
" <i>malus</i> var. <i>Rambur of</i>			
<i>Tsar. Koje Selo</i>		34	RYBIN, 1927a.
" <i>malus</i> var. <i>Reinette de</i>			
<i>Champagne</i>	26	34, 51 ³⁾	" "
" <i>malus</i> var. <i>Reinette de</i>			
<i>Oberdieck</i>		34	" "
" <i>malus</i> var. <i>Reinette d'Or-</i>			
<i>leano</i>		34	" "
" <i>malus</i> var. <i>Rosmarin blanc</i>	17	34	" "
" <i>malus</i> var. <i>Rother Stetti-</i>			
<i>ner</i>		34	" "
" <i>malus</i> var. <i>Sary-Sinap</i> .		34	" "
" <i>malus</i> var. <i>Sary-tursh-</i>			
<i>Alma</i>		34	" "
" <i>malus</i> var. <i>Skvoznoy naliu</i>	17	34	" "
" <i>malus</i> var. <i>Stayman Wi-</i>			
<i>nesap</i>		> 28 ⁴⁾	SHOEMAKER, 1926.
" <i>malus</i> var. <i>Suislepper</i> .		34	RYBIN, 1927a.
" <i>malus</i> var. <i>Tchernoguz</i> .	17	34	" "
" <i>malus</i> var. <i>Titovka</i> . .	17	34	" "
" <i>malus</i> var. <i>Wealthy</i> . . .	ca. 17		HEILBORN, 1928b.
" <i>malus</i> var. <i>Winter Golden</i>			
<i>Pearmain</i>		34, 51 ³⁾	RYBIN, 1927a.

¹⁾ Higher numbers were also found and in homoetotypic plates 16—28 (most frequently 21—24) were found.

²⁾ Irregular divisions were found in all these species.

³⁾ Among the seedlings, triploid (2n = 51) as well as diploid (2n = 34) plants were found. This variety was found to show irregular divisions.

⁴⁾ At diakinesis a number of bivalents and univalents were arranged irregularly.

ROSACEAE (continued)		n	2n	
<i>Pirus</i> (continued)				
<i>Pirus malus</i> var. <i>Winter Gray</i>				
	<i>Reinette</i>		34	RYBIN, 1927a.
	„ <i>malus</i> var. <i>Zalenka Crimean</i>		34	„ „
MALUS				
Section <i>Eumalus</i> Zabel				
	<i>Malus baccata</i> BORKH. ¹⁾ . . .		34	„ 1926.
	„ <i>communis</i> DC. (= <i>M. silvestris</i> MILL. ²⁾ . . .		34	„ „
	„ <i>silvestris</i> MILL. ¹⁾ . . .	17		KOBEL, 1927.
	„ <i>prunifolia</i> BORKH. ¹⁾ . . .		34	RYBIN, 1926.
	„ <i>pumila</i> var. <i>Niedzwetzkyana</i> C. K. SCHNEIDER ¹⁾ . . .	17		KOBEL, 1927.
	„ <i>pumila</i> var. <i>paradisiaca</i> C. K. SCHNEID. (Paradise) ¹⁾		34	RYBIN, 1926.
		17		KOBEL, 1927.
	„ <i>pumila</i> var. <i>praecox</i> C. K. SCHNEID. (Douchin) ¹⁾ . . .		34	RYBIN, 1926.
	„ <i>spectabilis</i> BORKH. ¹⁾ . . .		34	„ „
Section <i>Sorbomalus</i> Zabel.				
	<i>Malus angustifolia</i> MICHX. ¹⁾ . . .		34	„ „
	„ <i>coronaria</i> var. <i>ioensis</i> C. K. SCHNEID. ³⁾		65	„ „
	„ <i>ioensis</i>	14		MANEY & WELTER, 1928
	„ <i>ioensis</i> „Mercer county seedling”	13-15		„ „ „
	„ <i>Sargentii</i> REHD. ³⁾		64-69	RYBIN, 1926.
			68	„ „
	„ <i>Toringo</i> SIEB. ³⁾		64-71	„ „
	„ <i>Zumi</i> REHD. ¹⁾		34	„ „
Section (?) ⁴⁾				
	<i>Malus floribunda</i> SIEB. ¹⁾ ⁵⁾	17		KOBEL, 1927.
	„ <i>Halliana</i> Koehne	$47_1-(49)_1$ ⁶⁾		„ „
		2		
	„ <i>Scheideckeri</i> ZBL. ¹⁾	17		„ „
	„Kulturapfel” (Normal)	17		„ 1926b.

¹⁾ KOBEL (1928) referred to all these species as being diploid.

²⁾ Two forms, from European Russia and Transcaucasia, were examined.

³⁾ KOBEL (1928) referred to all these species as being tetraploid.

⁴⁾ The following species were not classified under sections.

⁵⁾ Three different forms coming under this species were examined.

⁶⁾ Metaphase plates showed varying unequal distribution of 46 to 49 (most frequently 47) chromosomes.

ROSACEAE (continued)	n	2n
<i>Malus</i> (continued)		
<i>Malus</i> sp. (Cultivated Races) ¹⁾		
<i>Baldwin</i>	48-49 ¹⁾	KOBEL, 1927.
	$\frac{2}{2}$	
<i>Baumann's Reinette</i>	ca. 36 ¹⁾	" "
	$\frac{2}{2}$	
<i>Berner Rosenapfel</i>	16	" 1926a.
	17	" 1926b ²⁾ , c, 1927.
<i>Bohnapfel</i>	ca. 24 ³⁾	" 1926a.
	34+8[-17] ₁	" 1926b.
	46 (-49?)	" 1927.
	$\frac{2}{2}$	
<i>Cellini</i>	17	" 1927.
<i>Cox's Orangen-Reibette</i>	17	" "
<i>Damason-Reinette</i>	45-47 ¹⁾	" "
	$\frac{2}{2}$	
<i>Danziger Kantapfel</i>	17	" "
<i>Esopus Spitzenberg</i>	17	" "
<i>Goldreinette von Blenheim</i>	ca. 40 ¹⁾	" "
	$\frac{2}{2}$	
<i>Harbert's Reinette</i>	45 ¹⁾	" "
	$\frac{2}{2}$	
<i>Jacques Lebel</i>	49-(51) ¹⁾	" "
	$\frac{2}{2}$	
<i>Kasseler-Reinette</i>	17	" "
<i>Menznauer Jagerapfel</i> (=		
<i>Rot Kanzler</i>)	ca. 38 ¹⁾	" "
	$\frac{2}{2}$	
<i>Muskat-Reintette</i>	17	" "
<i>Ontario Reinette</i>		33 ⁴⁾ " 1926a.
	17	" 1927.
<i>Pfirsichroter Sommerapfel</i>	17	" "
<i>Reseda-Reinette</i>	> 40 ¹⁾	" "
	$\frac{2}{2}$	
<i>Ribston-Pepping</i>	42 ¹⁾	" "
	$\frac{2}{2}$	
<i>Roter Eiserapfel</i>	47	KOBEL, 1927.
	$\frac{2}{2}$	

¹⁾ Irregular divisions were found in this species.

²⁾ The earlier number (n = 16) for this species was hereby corrected.

³⁾ Higher numbers were also found and in homoeotypic plates 16-28 (most frequently 21-24) were found.

⁴⁾ Only a few vegetative cells showing chromosomes were seen and in the clearest this number of chromosomes was counted, — though 24 was the number usually found in diakinesis.*

ROSACEAE (continued)	n	2n	
<i>Malus</i> (continued)			
<i>Schöner von Boskoop</i>	17, 19, $20 + \frac{9_1, 5_1, 4_1}{2}$		KOBEL, 1926a.
		$34 + 8_1 - 17_1$	„ 1926b.
	ca. 46^1 $\frac{2}{2}$		„ 1927.
<i>Sommergewürzaapfel</i>	17		„ „
<i>Stäpfner Rosenapfel</i>	$48 - 49^1$ $\frac{2}{2}$		„ „
<i>Transparente de Croncels</i> . .	17		„ 1926b, 1927.
		$34 + 8_1$	„ „
<i>Warner's King</i>	42^1 $\frac{2}{2}$		„ 1926c, 1927.
<i>Winter-Zitronenapfel</i> . . .	$48 - 49^1$ $\frac{2}{2}$		„ 1927.
<i>Transparente de Croncels</i> ×			
<i>Weisser Astrachan</i>	17		„ „
<i>Zchulanovka</i>		34	RYBIN, 1926.
<i>Mespilus germanica</i>		32	MEYER, J., 1915
<i>Rubus alleghaniensis</i> PORTER .	7		LONGLEY, 1924a.
„ <i>alleghaniensis</i>	7		JEFFREY, 1925.
„ <i>andrewsianus</i> BLANCHARD	ca. 10		LONGLEY, 1924a.
		21	JEFFREY, 1925.
„ <i>argutus</i> LINK	ca. 10		LONGLEY, 1924a.
		14	JEFFREY, 1925.
„ <i>chamaemorus</i>	28		LONGLEY, 1927a
„ <i>frondosus</i> BIGELOW		42	JEFFREY, 1925
„ <i>hispidus</i> L.	ca. 17		LONGLEY, 1924a
		35	JEFFREY, 1925
„ <i>idaeus</i> L. var. „ <i>Superlative</i> ”		14	CRANE & DARLINGTON, 1927.
„ <i>idaeus obtusifolius</i> WILLD		14	„ „ „
„ <i>jeckylanus</i> BLANCHARD. ca. 21			LONGLEY, 1924a
		42	JEFFREY, 1925.
„ <i>laciniatus</i> WILLD (? <i>R. Selmeri</i>)		28	CRANE & DARLINGTON, 1927.
„ <i>neglectus</i> PECK.	7		LONGLEY, 1924a.
		14	CRANE & DARLINGTON, 1927.
„ <i>phoenicolasus</i>	7		CHOMISURY, 1924.

¹⁾ Irregular divisions were found in all these species.

ROSACEAE (continued)	n	2n	
<i>Rubus</i> (continued)			
<i>Rubus plicatifolius</i> BLANCHARD ca. 17			LONGLEY, 1924a.
		35	JEFFREY, 1925.
„ <i>rusticanus</i> MERC. var.			
<i>inermis</i> (<i>R. inermis</i>			
WILLD.)	7	14	CRANE & DARLINGTON, 1927.
„ <i>thrysisger</i> BAB.	5, 14	28	„ „ „
„ <i>rusticanus</i> MERC. var.			
<i>inermis</i> × <i>R. thrysisger</i>			
BAB.		21, 28 ¹⁾	„ „ „
	14		
	13+2 _I		
	12+13+1 _I		„ „ „
„ sp. (?) var. <i>Baumforthi</i> .			
seedling ²⁾	7		CHOMISURY, 1927.
„ sp. (?) var. <i>Goliath</i> ²⁾ .	14		„ „
„ sp. (?) var. <i>Harzjuwel</i> ²⁾ .	7		„ „
„ sp. (?) <i>Himalaya berry</i>			
(<i>R. procerus</i>)		49	CRANE & DARLINGTON, 1927.
„ sp. (?) var. <i>Lawton</i> ³⁾ .	24		CHOMISURY, 1927.
„ sp. (?) <i>Laxtonberry</i>			
(Raspberry × Logan-			
berry)		49	CRANE & DARLINGTON, 1927.
„ sp. (?) <i>Laxtonberry</i> (self-			
seedlings)		49	„ „ „
„ sp. (?) var. <i>Loganberry</i> ⁴⁾	21		CHOMISURY, 1927.
		42	CRANE & DARLINGTON, 1927.
„ sp. (?) <i>Mahdi</i> (Raspber-			
ry × Blackberry) . .		21	„ „ „
„ var. <i>Norwich Wonder</i> .		14	CRANE, 1927.
„ var. <i>Superlative</i>		14	„ „
„ sp. (?) var. „ <i>Turcks frü-</i>			
<i>he Rot</i> “ ³⁾	14		CHOMISURY, 1927.
„ sp. (?) <i>Veitchberry</i> (Rasp-			
berry × Blackberry) .		28	CRANE & DARLINGTON, 1927.
„ <i>Loganberry</i> × <i>R. ne-</i>			
<i>glectus</i>		28	„ „ „
„ <i>Loganberry</i> × <i>R. niveus</i>		28	„ „ „
<i>Fragaria americana</i> BRITTON .	7	14	ICHIJIMA, 1926.
„ <i>americana alba</i>	7		MANGELSDORF & EAST, 1927.

¹⁾ Of 3 seedlings 2 were triploid (2n = 21) and the other was tetraploid (2n = 28).

²⁾ Divisions were regular.

³⁾ Division was regular.

⁴⁾ The first division was regular but lagging chromosomes often occurred in the second division.

ROSACEAE (continued)	n	2n	
<i>Fragaria</i> (continued)			
<i>Fragaria americana alba</i> PRO-			
TER	7		ICHIJIMA (given by EAST, 1928b)
„ <i>bracteata</i> HELLER . .	7		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928b).
	7	14	ICHIJIMA, 1926.
„ <i>californica</i> CHAM. &			
SCHLECHT	7		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928b).
	7	14	ICHIJIMA, 1926.
„ <i>chiloensis</i> ¹⁾	28		LONGLEY, 1926a.
„ <i>chiloensis</i> DUCHESNE.	28		ICHIJIMA, 1926.
„ <i>chiloensis</i> L.	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928b).
„ <i>cuneifolia</i> NUTT (?) .	28		ICHIJIMA, 1926.
„ <i>elatior</i>	21		MANGELSDORF, 1927.
	21 ²⁾	42	KIHARA, 1926.
„ <i>elatior</i> EHRH.	21		ICHIJIMA, 1926; ICHIJIMA (give by EAST, 1928b).
„ <i>elatior</i> EHR (<i>F. Mo-</i>			
<i>schata</i> DUCHESNE) .	21		MANGELSDORF & EAST, 1927.
„ <i>elatior</i> var. <i>Royal-</i>			
<i>Hautbois</i>	21		LONGLEY, 1926a.
„ <i>elatior</i> var. <i>Monstreus-</i>			
<i>Hautbois</i>	21		LONGLEY, 1926a.
„ <i>glauca</i> RYDB.	28	ca. 56	ICHIJIMA, 1926.
„ <i>glauca</i> WATSON (from			
Canada).	28		MANGELSDORF & EAST, 1927.
„ <i>glauca</i> WATSON . . .	28		ICHIJIMA (given by EAST, 1928b).
„ <i>grandiflora</i> EHR. . .	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928b)
„ <i>grandiflora</i> (probably			
<i>F. chiloensis</i>) . . .	28		MANGELSDORF, 1927.
„ <i>grandiflora</i> var.			
„ <i>Champion Early</i> ” .	28		ICHIJIMA, 1926.

¹⁾ *F. chiloensis* from Alaska and British Columbia showed the same chromosome number. (LONGLEY, 1926a).

²⁾ In the reduction divisions in the embryo-sac-mother-cell there were 20 bivalents and 2 univalents which KIHARA thought might be sex chromosomes.

ROSACEAE (continued)	n	2n	
<i>Fragaria</i> (continued)			
<i>Fragaria grandiflora</i> var. „Che- saapeake”	28		ICHIJIMA, 1926.
„ <i>grandiflora</i> var. „Clark's Seedling”	28		„ ”
„ <i>grandiflora</i> var. „Doc- tor Burrell”	28		„ ”
„ <i>grandiflora</i> var. „Et- tersburg”	28		„ ”
„ <i>grandiflora</i> var. „Gard- ners”	28		„ ”
„ <i>grandiflora</i> var. „La Pearl”	28		„ ”
„ <i>grandiflora</i> var. „New York”	28		„ ”
„ <i>grandiflora</i> var. „Pro- gressive”	28		„ ”
„ <i>grandiflora</i> var. „Suc- cess”	28		„ ”
„ <i>grandiflora</i> var. „Wil- liam Belt”	28		„ ”
„ <i>Helleri</i> HOLZ.	7	14	„ ”
„ <i>Mexicana</i> SCHLECHT.	7		MANGELSDORF & EAST, 1927, ICHIJIMA (given by EAST 1928b).
„	7	14	ICHIJIMA, 1926.
„ <i>vesca</i> ¹⁾	7		MANGELSDORF, 1927; LONGLEY 1926a.
„ <i>vesca</i> L. ²⁾	7		ICHIJIMA (given by EAST, 1928b); MANGELSDORF & EAST, 1927.
„	7	14	ICHIJIMA, 1926.
„ <i>vesca</i> ROSTRUP.	7		MANGELSDORF & EAST, 1927.
„ <i>vesca</i> var. <i>alpina</i> Hort. var. <i>Belle de Meaux</i>	7		LONGLEY, 1926a.
„ <i>vesca</i> var. <i>Americana</i> <i>alba</i>	7		„ ”
„ <i>virginiana</i> DUCHESNE ³⁾	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928b).
	28	ca. 56	ICHIJIMA, 1926.

¹⁾ *Fragaria vesca* from Petrograd and Tiflis both showed the same number according to LONGLEY (1926a).

²⁾ *Fragaria vesca* L. from Ecuador also had 7 chromosomes, according to MANGELSDORF and EAST (1927).

³⁾ *F. virginiana* # 27 also had 28 chromosomes (MANGELSDORF and EAST, 1927).

ROSACEAE (continued)	n	2n
<i>Fragaria</i> (continued)		
<i>Fragaria virginiana</i> (from Aurora Hills, Virginia).	28	LONGLEY, 1926a.
" <i>virginia</i> var. <i>glauca</i> .	28	" "
" <i>virginiana</i> var. <i>Hort.</i>		
<i>No. 13</i>	28	" "
" <i>virginiana</i> var. <i>Minnesota</i> # 3	26	VALLEAU, 1918.
" (hybrid?) <i>Hort.</i> var.		
" <i>Aroma</i> "	28	LONGLEY, 1926a.
" (hybrid?) <i>Hort.</i> var.		
" <i>Dunlap</i> "	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Harcourt de Thuey</i> .	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Howard No. 17</i> " . .	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Klondike</i> "	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Marshall</i> "	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Progressive</i> " . . .	28	" "
" (hybrid?) <i>Hort.</i> var.		
" <i>Redfew</i> "	28	" "
" (hybrid?) <i>Hort.</i> var. .		
" <i>Rockhill No. 26</i> " .	28	LONGLEY, 1926a.
" (hybrid?) <i>Hort.</i> var.		
" <i>Royal Sovereign</i> " .	28	" "
" <i>bracteata</i> × <i>F. Helleri</i>	14	ICHIJIMA (given by EAST, 1928b).
	7 & 14 ¹⁾	ICHIJIMA, 1926.
" <i>bracteata</i> × <i>F. virginiana</i>	$7 + 21 \frac{1}{2}$ ²⁾	" "
" <i>glauca</i> × <i>F. virginiana</i>	28	" "
" <i>Helleri</i> × <i>F. americana</i>	7	" "
" <i>vesca</i> × <i>F. americana</i>	7	" "

¹⁾ One of the F_1 plants and the F_2 hybrids obtained by ICHIJIMA (1926) by selfing this plant, had 14 chromosomes as the haploid number.

²⁾ In the meiotic division of this hybrid irregularities were observed and irregular tetrad formation resulted.

ROSEACEAE (continued)	n	2n
<i>Fragaria</i> (continued)		
<i>Fragaria vesca</i> × <i>F. Helleri</i> . .	7	ICHIJIMA, 1926.
„ <i>vesca</i> var. <i>alpina</i> Hort		
var. <i>Belle de Meaux</i>		
× <i>F. chiloensis</i> . .	7	LONGLEY, 1926a.
„ <i>vesca</i> var. <i>americana</i>		
<i>alba</i> × <i>F.</i> (hybrid?)		
hort. var. <i>Aroma</i> . .	28 ¹⁾	„ „
„ <i>virginiana</i> Hort. var.		
No. 27 × <i>F. chiloensis</i>	28 ²⁾	„ „
„ <i>virginiana</i> Hort. var.		
No. 27 × <i>F.</i> (hybrid?)		
hort. var. „Howard		
No. 17”	28	„ „
„ <i>virginiana</i> Hort. var		
No 27 × <i>F.</i> (hybrid		
hort. var. „Marshall	28	„ „
„ (hybrid?) Hort. var.		
„Dunlap” × <i>F. virginiana</i> hort. var.		
No. 13	28	„ „
„ (hybrid?) Hort. var.		
„Howard No. 17” ×		
<i>F. chiloensis</i>	28	„ „
„ (hybrid?) Hort. var.		
„Minn. No. 82 × <i>F.</i>		
(hybrid?) hort. var.		
„Marshall”	28	„ „
<i>Duchesnea indica</i>	42	ICHIJIMA, 1926.
„ <i>indica</i> ANDR.	42	MANGELSDORF & EAST, 1927.
<i>Potentilla alba</i>	14	TISCHLER, 1928b.
„ <i>anserina</i>	16	FORENBACHER, 1914 (given by
		TISCHLER, 1921-22).
„ <i>anserina</i> L (gigas		
form)	22(?) ³⁾	ROSCOE, 1927b.
„ <i>aurea</i>	ca. 28	TISCHLER, 1928b.
„ <i>erecta</i> (= <i>silvestris</i>) . .	16	FORENBACHER, 1914 (given by
		TISCHLER, 1921-22)

¹⁾ In one plant of this cross only 7 chromosomes were found.

²⁾ Irregular meiosis was observed in this hybrid.

³⁾ Though this number was found on one homoeotypic equatorial plate, fewer chromosomes were found on the sister plate. Very irregular divisions made it difficult to state the definite number of chromosomes present.

ROSECEAE (continued)	n	2n	
<i>Potentilla</i> (continued)			
<i>Potentilla reptans</i>	16		FORENBACHER, 1914 (given by TISCHLER, 1921-22).
" <i>rubens</i> ZIMM.	16 ¹⁾		TISCHLER, 1908.
" <i>rupestris</i>	8		FORENBACHER, 1914 (given by TISCHLER, 1921-22).
" <i>Tabernaemontani</i> ASCHERS.	16		TISCHLER, 1908.
" <i>Tabernaemontani</i> ASCHERS. × <i>P. ru-</i> <i>bens</i> ZIMM.	16	32	" "
<i>Geum coccineum</i>		70-(72)	HEITZ, 1926.
<i>Alchemilla cuneata</i> GAUD. . .	32		STRASBURGER, 1904a.
" <i>jallax</i> BUS.	32		" "
" <i>gelida</i> BUS.	32		" "
" <i>grossidens</i> BUS.	32		" "
" <i>micans</i> BUS.	32		" "
" <i>pentaphylla</i> L.	32		" "
" <i>speciosa</i> BUS.	32		" "
" <i>splendens</i> CHRIST.	32	ca. 64	" "
<i>Rosa acicularis</i>		56	BLACKBURN, 1925.
" <i>acicularis</i> LINDL. a <i>fennica</i> LALL. ²⁾	28		TÄCKHOLM, 1922.
" <i>acicularis</i> f. <i>fennica</i> LALL. .	21		" " ; PENLAND, 1923.
" <i>arvensis</i>	7		BLACKBURN, 1925.
" <i>arvensis</i> HUDS.	7	14	BLACKBURN & HARRISON, 1921 TÄCKHOLM, 1922.
" <i>blanda</i>	14	28	BLACKBURN, 1925.
" <i>blanda</i> AIT.	7		TÄCKHOLM, 1920; PENLAND, 1923.
"	14		TÄCKHOLM, 1922.
" <i>canina</i>	8		STRASBURGER, 1904b.
" <i>canina</i> L.		35	HURST, 1927.
" <i>canina persaticifolia</i> A. & M.	7+ca.20 _f		ROSENBERG, 1909b.
" <i>canina</i> varieties ³⁾	7+21 _f		TÄCKHOLM, 1922; BLACKBURN & HARRISON, 1921.
" <i>carolina</i>	7		BLACKBURN, 1925.

¹⁾ This number was judged from the hybrid with *P. Tabernaemontani* ASCHERS.

²⁾ TÄCKHOLM (1922) was uncertain about the specific determination of this form.

³⁾ In previous list, GAISER (1926) are given 4 varieties of *R. canina* found by BLACKBURN and HARRISON (1921), and 7 by TÄCKHOLM (1922), having 7 + 21_f as the haploid number.

ROSACEAE (continued)	n	2n	
<i>Rosa</i> (continued)			
<i>Rosa carolina</i> L.		14	TÄCKHOLM, 1920, 1922.
	7	14	HURST, 1927.
„ <i>cinnamomea</i>	14	28	„ 1927.
„ <i>cinnamomea</i> L. ¹⁾	7	14	TÄCKHOLM, 1920, 1922.
	14		„ „ PENLAND, 1923.
„ <i>cinnamomea</i> f. <i>foecundis-</i> <i>sima</i> (MÜNCH)		14	TÄCKHOLM, 1922.
„ <i>cinnamomea</i> L. var. <i>glab-</i> <i>rifolia</i> C. A. MEYER	7	14	„ „
„ <i>damascena</i>		21	HURST, 1927.
		28	„ „
„ <i>damascena</i> MILL.	14	28	TÄCKHOLM, 1920, 1922.
	14+7 ₁	35	„ „ „
„ <i>damascena</i> MILL. var. <i>trigintipetala</i> DIECK. . . .	14	28	„ „ „
„ <i>Froebelii</i> CHRIST.	7+21 ₁		HURST, 1925.
„ <i>Goethei</i> HORT.	7+7 ₁		„ „
„ <i>Hilliana</i> HURST.	14+28 ₁	56	„ „
„ <i>indica</i> L.	7	14	„ „
„ <i>indica</i>	7	14	„ 1927.
	14	28	„ „
		21	„ „
„ <i>lucida</i>	14		BLACKBURN, 1925.
„ <i>lucida</i> EHR.	14	28	TÄCKHOLM, 1920, 1922.
„ <i>macrophylla</i>	7	14	HURST, 1927.
	14	28	„ „
„ <i>macrophylla</i> LINDL. . . .	7		„ 1925 TÄCKHOLM, 1920, 1922.
„ <i>mollis</i>	7+14 ₁	28	BLACKBURN, 1925.
„ <i>mollis hesslensis</i> MATSS.			
var. <i>inversifolia</i> MATSS. . .	7+14 ₁	28	TÄCKHOLM, 1922.
„ <i>mollis hesslensis</i> MATSS. var. <i>correctillidens</i>			
MATSS.	7+14 ₁	28	„ „
„ <i>Moyesii</i> HEMS. & WILS. .	21	42	HURST, 1925.
		42	TÄCKHOLM, 1920, 1922.
„ <i>Moyesii</i> f. <i>rosa</i> REHDER & WILSON		28	„ „ „
„ <i>pimpinellifolia</i>	14	28	BLACKBURN, 1925.

¹⁾ In 1920 TÄCKHOLM had reported that certain varieties of *Cinnamomeae* were tetraploid, while others were diploid.

ROSACEAE (continued)	n	2n	
<i>Rosa</i> (continued)			
<i>Rosa pimpinellifolia</i> L. (various forms)	14	28	TÄCKHOLM, 1920, 1922; BLACKBURN & HARRISON, 1921; PENLAND, 1923.
„ <i>pimpinellifolia</i> var. <i>spinossissima</i>	14		BLACKBURN & HARRISON, 1921
„ <i>pimpinellifolia</i> L. var. <i>Ripartii</i> (DEGL.) R. KELLER	14	28	TÄCKHOLM, 1922.
„ <i>pimpinellifolia</i> L. var. <i>hispida</i> (SIMS) KOEHNE		28	„ „
„ <i>pomifera</i> HEUM.	7+14 ₁		HURST, 1925.
„ <i>pomifera</i> HEUM. <i>recondita</i> R. KELLER	7+14 ₁	28	TÄCKHOLM, 1922.
„ <i>pomifera</i> <i>Grenieri</i> R. KELLER	7+14 ₁	28	„ „
„ <i>pratincola</i>	14		BLACKBURN, 1925.
„ <i>provincialis</i> AIT.		21	HURST, 1925.
„ <i>rubiginosa</i> L.	8		STRASBURGER, 1904b.
	7+21 ₁		TÄCKHOLM, 1920, 1922.
„ <i>rubiginosa</i> var. <i>comosa</i> RIP.	7+21 ₁		BLACKBURN & HARRISON, 1921
„ <i>rubiginosa</i> var. <i>comosa</i> (RIP.) DUN. (H.B.R.rub.)	7+21 ₁	35	TÄCKHOLM, 1922.
„ <i>rubiginosa</i> var. <i>apricorum</i> RIP.	7+21 ₁		BLACKBURN & HARRISON, 1921
„ <i>rugosa</i> THUNB.	7		HURST, 1925; TÄCKHOLM, 1920, BLACKBURN & HARRISON 1921.
„ <i>rugosa</i> THUNB. a <i>ferox</i> (LAWR.) C. A. MEYER .	7	14	TÄCKHOLM, 1922.
„ <i>rugosa</i> THUNB. B. <i>Kamtschatica</i> (VENT.) CRÉP. .		14	„ „
„ <i>rugosa</i> THUNB. y <i>chamissoniana</i> C. A. MEYER .		14	„ „
„ <i>semperflorens</i> CURT.	7+7 ₁		HURST, 1925.
„ <i>setigera</i>	7		BLACKBURN, 1925.
„ <i>virginiana</i>	21		HURST, 1927.
	28		„ „
„ <i>Willmottiae</i> HEMSL.	7		„ „
		14	TÄCKHOLM, 1920, 1922.

HURST (1925) without stating the chromosome numbers for the individual species gave the following determinations:

Diploid Species: *Rosa Brunonii* LINDL.; *R. fraxinifolia* LINDL.; *R. Hugonis*

ROSACEAE (continued)

n

2n

HURST (1928) LIST (continued)

HEMSL.; *R. moschata* MILL.; *R. multiflora* THUNB.; *R. pisocarpa* A. GRAY; and *R. sericea* LINDL.

Triploid Species: *Rosa damascena* L. (from Holland and France).

Tetraploid Species: *Rosa altaica* WILID.; *R. centifolia* L.; *R. mollis* SM.; *R. odorata* SWT. var. *Gloire de Dijon*; and *R. spinosissima* L.

Pentaploid Species: *Rosa damascena* L. (from Persia); and *R. tomentosa* SM.

Hexaploid Species: *Rosa alba* L.; *R. glutinosa* var. *leicladia* CHRIST.; *R. inodora* FRIES.; *R. Jundzilii* BESS.; *R. nutkana* PRESL.; *R. stylosa* var. *evanida* CHRIST.

Octoploid Species: *Rosa acicularis* LINDL.

HURST, in his later list (1928) confirms most of the above determinations and includes many new species. The 1928 list is as follows:

Diploid Species ($n = 7$): *Rosa abyssinica* R.Br.; *R. anemoneflora* Fortune; *R. arvensis* HUBS.; *R. Banksiae* AIT.; *R. blanda* AIT.; *R. Brunoni* LINDL.; *R. cabulica* BOISS.; *R. Carolina* L.; *R. cathayensis* REHDR. et WILS.; *R. chinensis* JACQ.; *R. cinnamomea* L.; *R. coruscans* WAITZ.; *R. corymbulosa* ROLFE.; *R. davurica* PALL.; *R. Ecae* AITCH.; *R. elegantula* ROLFE.; *R. Fendleri* CRÉP.; *R. foliolosa* NUTT.; *R. Genteliana* LÉV. et VAN.; *R. gigantea* COLL.; *R. Giraldui* CRÉP.; *R. gymnocarpa* NUTT.; *R. Helenae* REHDR. et WILS.; *R. Hugonis* HEMSL.; *R. laevigata* MICHX.; *R. Leschenaultiana* (WIGHT et ARNOTT); *R. longicuspis* BERTOL.; *R. luciae* FRANCH et ROCHEBR.; *R. macrophylla* LINDL.; *R. Marettii* LÉV.; *R. microcarpa* LINDL.; *R. moschata* HERRM.; *R. multiflora* THUNB.; *R. nipponensis* CRÉP.; *R. nitida* WILLD.; *R. omeiensis* ROLFE.; *R. persetosa* ROLFE.; *R. Phoenicia* BOISS.; *R. pisocarpa* A. GRAY; *R. Pissarti* CARR.; *R. rubrifolia* AIT.; *R. Rubus* LÉV. et VAN.; *R. rugosa* THUNB.; *R. sempervirens* L.; *R. sericea* LINDL.; *R. sertata* ROLFE.; *R. setigera* MICHX.; *R. soulieana* CRÉP.; *R. Watsoniana* CRÉP.; *R. Webbiana* WALL.; *R. Wichuriana* CRÉP.; *R. Willmottiae* HEMSL.; *R. Woodsii* LINDL.; *R. Xanthina* LINDL.

Triploid Species ($\delta n = 7$, $\phi n = 14$; $2n = 21$): Forms of *Rosa sempervirens* LEM.; *R. semperflorens* CURTIS.; *R. chinensis* JACQ.; *R. odorata* SWEET.

Tetraploid Species ($\delta n = 14$, $\phi n = 14$): *Rosa acicularis nipponensis* AUCT.; *R. adjecta* DESFGL.; *R. altaica* WILLD.; *R. ballica* ROTH.; *R. bella* REHD. et WILS.; *R. Bordereana* ROUY.; *R. carolina* L.; *R. centifolia* L.; *R. chinensis* JACQ.; *R. chusima*; *R. corymbosa* EHR.; *R. Damascena* BLACKW.; *R. Davidi* CRÉP.; *R. foetida* HERRM.; *R. gallica* L.; *R. glandulosa* BELLARDI; *R. grandiflora* LINDL.; *R. hemispherica* HERRM.; *R. hispida* SIMS.; *R. Hudsoniana* THORY; *R. Humilisgrandiflora* BAKER; *R. Huntii* HURST (sp. nov.); *R. inermis* MILL.; *R. johannensis* FERN.; *R. lageneria* VILL.; *R. laxa* RETZ.; *R. lucida* EHR.; *R. Lunellii* GREENE; *R. lutea* MILL.; *R. lutescens* PURSH.; *R. macrophylla* LINDL. (em.); *R. macrophylla crasseaculeata* VILM.; *R. macrophylla Fargesii* HORT.; *R. macrophylla* var. *Korolkowi*; *R. monspeliaca* GOUAN; *R. multibracteata* HEMSL. et WILS.; *R. muscosa* MILL.; *R. myriacantha* D.C.; *R. ochroleuca* SWARTZ.; *R. palustris* MARSH.; *R. parvifolia* EHR.; *R. pendulina* L.; *R. pimpinellifolia* L.; *R. pomponia* D.C.; *R. provincialis* MILL.; *R. pumila* JACQ.; *R. punicea* MILL.; *R. pyrenaica* GOUAN; *R. Rapini* BOISS and BAL.; *R. reducta* BAKER; *R. Ripartii* DESEGL.; *R. roseo Moyessii* ALMÇ.; *R. rubra* BLACKW.; *R.*

ROSACEAE (Continued)

n

2n

HURST (1928) List (continued)

saturata LAMM.; *R. scotica* MILL.; *R. sempervirens* L. (em); *R. setipoda* HEMSL. et WILS.; *R. spinosissima* L.; *R. suffulta* GREENE; *R. virginiana* MILL.

Irregular Tetraploid Species ($\delta n = 7$, $\varphi n = 21$): *Rosa mollis* SMITH; *R. omissa* DESEGL.; *R. pomifera* HERRM.; *R. recondita* PUCET; *R. rubrifolia* VILL.

Pentaploid Species ($\delta n = 7$; $\varphi n = 28$): *Rosa agrestis* SAVI; *R. canina* L.; *R. corriifolia* FRIES.; *R. elliptica* TAUSCH.; *R. Froebeli* CHRIST.; *R. glauca* VILL.; *R. glutinosa* SIBTH. and SM.; *R. micrantha* SMITH; *R. pseudo mollis* LEY; *R. rubiginosa* L.; *R. tomentosa* SMITH.

Hexaploid Species ($\delta n = 21$; $\varphi n = 21$): *Rosa Bourgeauiana* CRÉP.; *R. Engelmanni* S. WATS.; *R. manca* GREENE; *R. Moyesii* HEMSL. and WILS.; *R. nutkana* PRESL.; *R. Sayi* SCHWEIN.; *R. Wilsoni* BORR.

Irregular Hexaploid Species ($\delta n = 7$; $\varphi n = 35$): *Rosa inodora* FRIES.; *R. Jundzili* BESS.; *R. Pouzini* TRATT.

Octoploid Species ($\delta n = 28$; $\varphi n = 28$): *Rosa acicularis* LINDL.; *R. Täckholmii* HURST (sp. nov.).

<i>Rosa cinnamomea</i> × <i>R. rugosa</i>	7	BLACKBURN, 1925.
„ <i>pendulina</i> × <i>R. pimpinellifolia</i>	14	„ „
„ <i>cinnamomea</i> × <i>R. pendulina</i>	7+7 ₁	„ „
„ <i>pendulina</i> × <i>R. nutkana</i>	14+7 ₁	„ „
„ <i>tomentosa</i> × <i>R. pimpinellifolia</i> (= <i>R. Sabini</i>) .	14+7 ₁	„ „
„ <i>pimpinellifolia</i> × <i>R. tomentosa</i> (= <i>R. Wilsoni</i>)	21	42 „ „
<i>Neurada procumbens</i> . . .	6	MÜRBECK, 1916.

PRUNUS ¹⁾Subgenus *Amygdalus*Section *Eumygdalus* SPACH.

<i>Prunus communis</i> FRITSCH . .	8	KOBEL, 1927.
„ <i>communis</i>	8	„ 1928.
„ <i>communis</i> var. <i>persicoides</i>	8	„ „
„ <i>persica</i>	8	KNOWLTON, 1924; KOBEL, 1928.
„ <i>persica</i> STOKES . . .	16	OKABE, 1927, 1928.
„ <i>persica</i> S. et Z. varieties:		
<i>Alexis Lepere</i>	8	KOBEL, 1927.
<i>Aribaud</i>	8	„ „

¹⁾ Classification under subgenera and sections is according to C. K. SCHNEIDER (1906).

ROSACEAE (continued)

n

2n

PRUNUS (Continued)

Subgenus *Amygdalus* (cont'd)Section *Eumygdalus* SPACH. (cont'd)

<i>Ballet</i>	8		KOBEL, 1927.
<i>Belle de Vitry</i>	8		" "
<i>Bon ouvrier</i>	8	"	" "
<i>Grosse Mignonne Lative</i>	8		" "
<i>Grosse Mignonne tardive</i>	8		" "
<i>Incomparable Grilloux</i>	8		" "
<i>Karl Ingu</i>	8		" "
<i>La France</i>	8		" "
<i>Madeleine rouge</i>	8		" "
<i>Monstreuse de Douaie</i>	8		" "
<i>Noire de Montreuil</i>	8		" "
<i>President Cardinaux</i>	8		" "
<i>Siegei</i>	8		" "
<i>Sneed</i>	8		" "
<i>Teton de Venus</i>	8		" "
<i>Vilmorin</i>	8		" "
<i>Prunus persica</i> f. <i>Denjuro</i>	8		ASAMI, 1927.
" <i>persica</i> f. <i>Shanghai</i>	8		" "
" <i>persica</i> vars.		16	DARLINGTON, 1928.
" <i>communis</i> FRITSCH × <i>P. persica</i> S. et Z. (= <i>Amygdalus communis</i> var. <i>persicoides</i> SER.).	8		" "
" <i>triloba</i> LDL.		64	" "
" <i>triloba</i>	32		KOBEL, 1928.

Section *Chamaeamygdalus* SPACH.

<i>Prunus nana</i> FOCKE		16	" "
" <i>nana</i>	8		" 1928.

Subgenus *Cerasus* JUSS.Section *Eucerasus* KOEHNE

<i>Prunus avium</i> L.		16	OKABE, 1927, 1928.
" <i>avium</i> L. varieties:			
<i>Bingkirsche</i>	8		KOBEL, 1927.
<i>Hedelfinger Riesenkirische</i>	8		" "
<i>Maiherzkirsche</i>	8		" "
<i>Multenzerkirsche</i>	8		" "
<i>Noire à grappes</i>	8		" "
<i>Prinzessinkirsche</i>	8		" "
<i>Regikirsche</i>	8		" "
<i>Schwarze Herzkirsche</i>	8		" "
<i>Prunus avium</i>	8		DARLINGTON, 1927b; KOBEL, 1928.

ROSACEAE (continued)	n	2n
PRUNUS (continued)		
Subgenus <i>Cerasus</i> Juss. (Cont'd)		
Section <i>Eucerasus</i> KOEHNE (cont'd)		
<i>Prunus avium</i> varieties:		
<i>Bigarreau de Schrecken</i> . . .	17	CRANE, 1927; DARLINGTON, 1928.
<i>Bigarreau Kentish</i>	17	CRANE, 1927; DARLINGTON, 1928.
<i>Bigarreau Noir de Schmidt</i> .	17	CRANE, 1927; DARLINGTON, 1928.
<i>Bigarreau noir de Guben</i> . .	17	CRANE, 1927; DARLINGTON, 1928.
<i>Bigarreau Napoleon</i>	18	CRANE, 1927; DARLINGTON, 1928.
<i>Black Eagle</i>	19	CRANE, 1927; DARLINGTON, 1928.
<i>Bohemian Black</i>	18	CRANE, 1927.
<i>Bohemian Black Bigarreau</i> .	18	DARLINGTON, 1928.
<i>Decumana</i>	17 (?)	" "
<i>Early Purple Guigne</i>	17	" "
<i>Elton</i>	18	CRANE, 1927; DARLINGTON, 1928.
<i>Emperor Francis</i>	18	CRANE, 1927; DARLINGTON, 1928.
<i>Governor Wood</i>	17	DARLINGTON, 1928.
<i>Guigne d'Annonay</i>	18	CRANE, 1927; DARLINGTON, 1928.
<i>Knight's Early Black</i> . . .	19	CRANE, 1927; DARLINGTON, 1928.
<i>Noble</i>	17	CRANE, 1927; DARLINGTON, 1928.
<i>Waterloo</i>	19	CRANE, 1927; DARLINGTON, 1928.
<i>Yellow Spanish</i>	16 (?)	CRANE, 1927.
<i>Prunus cerasus</i> L. varieties:		
<i>Belle de Montreuil</i> ¹⁾	16 ²⁾	KOBEL, 1927.
<i>Griotte du Nord</i> ²⁾	16 ²⁾	" "
<i>Kaiserin Eugenie</i> ¹⁾	16 ²⁾	" "
<i>Montmorency</i> ¹⁾	16 ²⁾	" "
<i>Ostheimer Weichsel</i> ³⁾ . . .	16 ²⁾	" "
<i>Schattenmorelle</i> ³⁾	16 ²⁾	" "

¹⁾ These species belong to var. *frutescens* NEILR. = subsp. *acida* ASCHERS und GRÄB.

²⁾ Irregularities in meiotic divisions were observed. Besides metaphase plates showing 16 and 16 chromosomes, there were others with 15 and 17.

³⁾ These species belong to var. *typica* C. K. SCHNEIDER = subsp. *Eucerasus* ASCHER und GRÄB.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus <i>Cerasus</i> Juss. (cont'd)			
Section <i>Eucerasus</i> KOEHNE (cont'd)			
<i>Prunus cerasus</i>	16		DARLINGTON, 1927b.
„ <i>cerasus</i> varieties:			
<i>Empress Eugenie</i> (?)		32	CRANE, 1927; DARLINGTON, 1928.
<i>Kentish Red</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Kentish Red „A”</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Late Duke</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>May Duke</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Morello</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Reine Hortense</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Wye Morello</i>		32	CRANE, 1927; DARLINGTON, 1928.
<i>Prunus cerasus</i> var. <i>acida</i>	< 24		KOBEL, 1928.
„ <i>cerasus</i> var. <i>typica</i>	< 24		„ „
„ <i>pumila</i> L.	8		„ 1927.
„ <i>pumila</i>	8		„ 1928.
„ sp.(?) (<i>Reine Hortense</i> ¹⁾)	16		„ 1927.
Section <i>Mahaleb</i> KOEHNE			
„ <i>Mahaleb</i> L.	8		„ 1927.
„ <i>Mahaleb</i>	8		„ 1928.
Section <i>Pseudocerasus</i>			
<i>Prunus serrulata</i> LDL.	8		„ 1927.
<i>Prunus serrulata</i>	8		„ 1928.
„ <i>serrulata</i> LINDL. varieties (<i>formae</i>)			
<i>affinis</i> MIYOSHI „ <i>Jyō-nioi</i> ”	16		OKABE, 1927, 1928.
<i>albida</i> MIYOSHI „ <i>Shirotae</i> ”	24 ²⁾		„ „ „
<i>amabilis</i> MIYOSHI „ <i>Higurashi</i> ”	16		„ 1928.
<i>angustipeta</i> MIYOSHI „ <i>Koke-Shimidzu</i> ”	16		„ 1927, 1928.

¹⁾ KOBEL states this used to be considered a hybrid between *P. avium* and *P. cerasus*.

²⁾ These varieties having $2n = 24$ showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

ROSACEAE (continued)	n	2n
PRUNUS (continued)		
Subgenus <i>Cerasus</i> Juss. (Con't).		
Section <i>Pseudocerasus</i> (Cont'd.)		
<i>arguta</i> MIYOSHI „Washino-o”	24 ¹⁾	OKABE, 1927, 1928.
<i>atroruba</i> MIYOSHI „Kirin” .	16	„ „ „
<i>bulbata</i> MIYOSHI „Ojyôchin”.	24 ¹⁾	„ „ „
<i>caespitosa</i> MIYOSHI „Takasz- go”	24	„ 1928.
<i>campanulata</i> MIYOSHI „Gijyo”	16	„ 1927, 1928.
<i>candida</i> MIYOSHI „Ariake” .	24 ¹⁾	„ „ „
<i>cataracta</i> MIYOSHI „Taki- noi”	16	„ „ „
<i>classica</i> MIYOSHI „Fugenzô”	16	„ „ „
<i>communis</i> MIYOSHI „Koshio- yama”	16	„ „ „
<i>contorta</i> MIYOSHI „„Fukuro- kuji”	24 ¹⁾	„ „ „
<i>decora</i> MIYOSHI „Horinji” .	16	„ „ „
<i>dilata</i> MIYOSHI „Amayadori”	24	„ 1928.
<i>diversiflora</i> MIYOSHI „Miku- rumagaeshi”	16	„ „
<i>erecta</i> MIYOSHI „Amanogawa”	16	„ 1927, 1928.
<i>fasciculata</i> MIYOSHI „Ito-Ku- kuri”	16	„ „ „
<i>formosissima</i> MIYOSHI „Beni- tora-no-o”	16	„ 1928.
<i>glauca</i> MIYOSHI „Minakami”	16	„ „
<i>grandiflora</i> MIYOSHI „Man- getsu”	24 ¹⁾	„ 1927, 1928.
<i>homogena</i> MIYOSHI „Koko- noe”	16	„ „ „
<i>hosokawa-odora</i> MIYOSHI „Hosokawa-nivi”	16	„ „ „
<i>Komatsunagi</i> MIYOSHI „Ko- matsunagi”	24 ¹⁾	OKABE, 1927, 1928.
<i>luteo-virens</i> MIYOSHI „Ukon”	16	„ „ „
<i>multipetala</i> MIYOSHI „Naji- ma-sakura”	16	„ 1928.
<i>multiplex</i> MIYOSHI „Shiroha- na Mazakura”	24 ¹⁾	„ 1927, 1928.
<i>nigrescens</i> MIYOSHI „Usuzu- mi”	25	„ 1928.

¹⁾ These varieties having $2n = 24$ showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus <i>Cerasus</i> Juss. (Cont'd.)			
Section <i>Pseudocerasus</i> (Cont'd.)			
<i>nivea</i> MIYOSHI „ <i>Shirayuki</i> ” .	16	OKABE, 1927, 1928.	
<i>nobilis</i> MIYOSHI „ <i>Yedo</i> ” . .	16	” ” ”	
<i>picta</i> MIYOSHI „ <i>Senriko</i> ” . .	24 ¹⁾	” ” ”	
<i>purpurascens</i> MIYOSHI „ <i>Kan-</i> <i>zan</i> ”	16	” ” ”	
<i>purpurascens</i> suf. <i>pallida</i> MI- YOSHI „ <i>Masu-yama</i> ” . . .	16	” ” ”	
<i>purpurea</i> MIYOSHI „ <i>Marusa-</i> <i>kizakura</i> ”	16	” 1928.	
<i>regularis</i> MIYOSHI „ <i>Itsuka-</i> <i>Yama</i> ”	16	” ”	
<i>rubescens</i> MIYOSHI „ <i>Arashi-</i> <i>Yama</i> ”	16	” 1928.	
<i>rubida</i> MIYOSHI „ <i>Ben-dono</i> ”.	16	” ” 1928.	
<i>similis</i> MIYOSHI „ <i>Tagui-aras-</i> <i>hi</i> ”	16	” ” ”	
<i>splendens</i> MIYOSHI „ <i>Chôshû-</i> <i>kizakura</i> ”	16	” ” ”	
<i>superba</i> MIYOSHI „ <i>Shôgetsu</i> ”		” ” ”	
<i>surugadai</i> MIYOSHI „ <i>Suraga-</i> <i>dai-nioi</i> ”	16	” 1928	
<i>tricolor</i> MIYOSHI „ <i>Gyôikô</i> ”	16	” ”	
<i>uniifolia</i> MIYOSHI „ <i>Ichiyô</i> ” .	16	” ”	
Subgenus <i>Euprunus</i> C. K. SCHNEIDER			
Section <i>Armeniaca</i> , W. D. J.			
<i>Prunus Armeniaca</i> L. „ <i>Am-</i> <i>brosia</i> ”	16	KOBEL, 1927.	
” <i>Armeniaca</i> L. „ <i>Früher</i> <i>Moorpark</i> ”	8	” ”	
” <i>Armeniaca</i> L. „ <i>Luizet-</i> <i>Aprikose</i> ”	8	KOBEL, 1927.	
” <i>Armeniaca</i> L. „ <i>Précocé</i> <i>de Boulbon</i> ” ²⁾	8	” ”	
” <i>Armeniaca</i>	8	” ”	
” <i>Armeniaca</i> L. var. <i>Ansu</i> <i>Max</i>	16	OKABE, 1927, 1928.	

¹⁾ These varieties having $2n = 24$ showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

²⁾ An unknown kind from Hauser Gardeners in Wadenswil showed $n = 8$ also.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus <i>Euprunus</i> C. K. SCHNEIDER. (Cont'd).			
Section <i>Prunophora</i> FIORI et PAOL			
<i>Prunus cerasifera</i>	8		DARLINGTON, 1927b; KOBEL, 1928.
„ <i>cerasifera</i> var. <i>Mariana</i>		16	CRANE, 1927, DARLINGTON, 1928.
„ <i>cerasifera</i> EHR. s. l.	„		KOBEL, 1927.
„ <i>cerasifera</i> EHR. s. l. „ <i>Myroblane</i> ”	8		„ „
„ <i>cerasifera</i> EHR. s. l. „ <i>Kirschlorne</i> ”	8		„ „
„ <i>cerasifera</i> EHR. s. l. var. <i>Pissardi</i> KOEHNE (= <i>P. Pissardi</i> CARR).	8		„ „
„ <i>Pissardi</i>	8		„ „
„ <i>cerasifera</i> EHR. s. l. var. <i>Pissardi Moseri</i>	8 ¹⁾		„ „
„ <i>Moseri</i>	8		„ 1928.
„ <i>domestica</i>		48	CRANE, 1927.
	24		DARLINGTON, 1927b.
	<24		KOBEL, 1928.
„ <i>domestica</i> s. l.	24		„ „
„ <i>domestica</i> L.	16		OKABE, 1927.
„ <i>domestica</i> L. ssp.: <i>insititia</i> (L.) POIRET var. <i>Juliana</i> L. (St. Julien pflaume)			KOBEL, 1927.
<i>insititia</i> (L.) POIRET var. <i>potaniorum</i> BOUTGNY (Katalonischer Spilling)	24		
<i>insititia</i> (L.) POIRET var. <i>cearea</i> L. (Mirabelle von Metz)	24		„ „
<i>italica</i> BORKHAUSEN var. <i>Claudiana</i> POIRET (g.g. Reineclaude)	24		„ „
<i>italica</i> BORKHAUSEN var. <i>ovoides</i> MARTENS (Pfirsichpflaume)	24		„ „
<i>italica</i> BORKHAUSEN var. <i>ovoides</i> MARTENS (Schöne von Lowen)	24		„ „

¹⁾ Irregular meiotic divisions were observed.

ROSACEAE (continued)	n	2n
PRUNUS (continued)		
Subgenus <i>Euprunus</i> C. K. SCHNEIDER. (Cont'd).		
Section <i>Prunophora</i> FIORI et PAOL (Cont'd).		
<i>italica</i> BORKHAUSEN var.		
<i>ovoides</i> MARTENS (rote Herrenpflaume)	24	KOBEL, 1927.
<i>oeconomica</i> BORKHAUSEN var.		
<i>mamillaris</i> SCHÜBELER et MARTENS (Bühler Frühzwetschge)	24 ¹⁾	" "
<i>oeconomica</i> BORKHAUSEN var.		
<i>mamillaris</i> SCHÜBELER et MARTENS (Grossherzog) . .	24	" "
<i>oeconomica</i> BORKHAUSEN var.		
<i>oxycarpa</i> (BECHSTEIN) (Jefferson)	24	" "
<i>oeconomica</i> BORKHAUSEN var.		
<i>oxycarpa</i> (BECHSTEIN) (Washington)	24	" "
<i>oeconomica</i> BORKHAUSEN var.		
<i>pruneauliana</i> SER. (Deutsche Hauszwetschge) . .	24	" "
<i>oeconomica</i> BORKHAUSEN var. <i>pruneauliana</i> SER. (Italienische Hauszwetschge)	24	" "
<i>oeconomica</i> BORKHAUSEN var. <i>subrotunda</i> (BECKSTEIN) (Kirkespflaume) . .	24	" "
<i>Prunus nigra</i> AIT.	8	" "
" <i>nigra</i>	8	" 1928.
" <i>spinosa</i>	16	DARLINGTON, 1927b; KOBEL, 1928.
	32	CRANE, 1927.
" <i>spinosa</i> L. ²⁾	16 ³⁾	KOBEL, 1927.
" <i>spinosa</i> seedling . . .	32	DARLINGTON, 1928.
" <i>triflora</i> ROXB.	8	DARLINGTON, 1927b; KOBEL, 1927.
	16	OKABE, 1927, 1928.
Subgenus <i>Padus</i> BORKH.		
<i>Prunus Padus</i> L. (= <i>P. racemosa</i> LAM.)	16	KOBEL, 1927.

¹⁾ In this form only 23 chromosomes were frequently counted.

²⁾ Four different examples were examined.

³⁾ Irregularities in division occurred.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus <i>Padus</i> BORKH. (Cont'd).			
<i>Prunus Padus</i>	16		KOBEL, 1928.
" <i>Padus</i> L.		32	OKABE, 1927, 1928.
" <i>serotina</i> AGARDH. . . .		32	KOBEL, 1927.
" <i>serotina</i>	16		" "
Subgenus <i>Laurocerasus</i> ROEMER			
<i>Prunus Laurocerasus</i> ROEMER			
var. <i>macrophylla</i> S. et			
Z.		72	KOBEL, 1927.
" <i>Laurocerasus</i> ROEMER			
var. <i>schipkaensis</i>			
SPATH	ca. 72	" "	
" <i>Laurocerasus</i>	72	"	1928.
Section <i>Prunophora</i> NECK ¹⁾ .			
<i>Prunus Mume</i> S. et Z.	16		OKABE, 1927, 1928.
" <i>Mume</i> var. <i>microcarpa</i>			
MAKINO	16	" "	"
" <i>Mume</i> (a race).	24	"	1928.
Section <i>Amygdalus</i> TOURN.			
<i>Prunus amygdalus</i> STOKES . .	16		OKABE, 1927, 1928.
" <i>amygdalus</i> vars.	16		DARLINGTON, 1928
Section <i>Cerasus</i> TOURN.			
<i>Prunus cerasoides</i> DON. var.			
<i>campanulata</i> KOIDZ. . .	16		OKABE, 1927, 1928.
" <i>crasipes</i> KOIDZ.	16	" "	"
" <i>incisa</i> THG.	16	" "	"
" <i>Itosakura</i> SIEB.	16	" "	"
" <i>Itosakura</i> var. <i>pendula</i>			
KOIDZ.	16	" "	
" <i>Itosakura</i> (a race). . .	24	"	1928.
" <i>japonica</i> THG.	16	"	1927, 1928.
" <i>Kurilensis</i> MIYABE . .	16	" "	
" <i>mutabilis</i> MYOSHI var.			
(formae):			
<i>brevipedunculata</i> MIYOSHI			
(<i>Kojima-sakura</i>).	16	"	1928.
<i>dilucularis</i> MIYOSHI (<i>Hino-</i>			
<i>deno-sakura</i>)	16	" "	
<i>formosa</i> MIYOSHI (<i>Maruko-</i>			
<i>sakura</i>)	16	" "	
<i>hiemalis</i> MIYOSHI (<i>Jyûroku-</i>			
<i>nichi-sakura</i>)	16	" "	

¹⁾ The following arrangement is from OKABE (1928).

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus <i>Laurocerasus</i> ROEMER (Cont'd).			
Section <i>Cerasus</i> TOURN. (Cont'd).			
<i>Katsumi</i> MIYOSHI (<i>Katsumi-sakura</i>)	16	OKABE, 1928.	
<i>longipedunculata</i> MIYOSHI (<i>Kasa-sakura</i>).	16	" "	
<i>musashiensis</i> MIYOSHI (<i>musashino-sakura</i>)	16	" "	
<i>nebrosa</i> MIYOSHI (<i>Kasumi-sakura</i>)	16	" "	
<i>regalis</i> MIYOSHI (<i>Kwao-sakura</i>)	16	" "	
<i>rotunda</i> MIYOSHI (<i>Midzuho-sakura</i>)	16	" "	
<i>rubriflora</i> MIYOSHI (<i>Komatsu-sakura</i>)	16	" "	
<i>speciosa</i> MIYOSHI (<i>Jurokunchi-zakura</i>)	16	" 1927.	
<i>speciosa</i> MIYOSHI (<i>Oshima-sakura</i>)	16	" "	
<i>Sumizomo-odora</i> MIYOSHI (<i>Sumizome-nioi</i>)	16	" 1928.	
<i>tanashiensis</i> MIYOSHI (<i>Tanashi-sakura</i>)	16	" "	
<i>venusta</i> MIYOSHI (<i>Fuhima-sakura</i>)	16	" "	
<i>Prunus pseudo-cerasus</i> LINDL.	32	" "	
" <i>sachalinensis</i> MIYOSHI	16	" 1927, 1928.	
" <i>subhirtella</i> (Miq.) Koidz.	16	" " "	
" <i>tomentosa</i> THG.	16	" " "	
" <i>yedoensis</i> MATSUM.	16	" " "	
" <i>jedoensis</i>	16	ISHIKAWA, 1916.	
Section <i>Padus</i> MÖNCH			
<i>Prunus Grayana</i> MAXIM.	32	OKABE, 1927, 1928.	
" <i>Ssiori</i> F. SCHMIDT	32	" " "	
Section(?) ¹⁾			
<i>Prunus acida</i>	16	DARLINGTON, 1927b.	
" <i>acida multicaarpa</i>	32	" 1928.	
" <i>acida salicifolia</i>	32	" " "	
" <i>americana</i> „Iron Clad”	10	DORSEY, M. 1919.	

¹⁾ The following species were not classified under sections.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
<i>Prunus americana</i> „Stoddard”	10		DORSEY, M. 1919.
„ <i>americana mollis</i> „Wolf		20	„ „ „
„ <i>avium nana</i>		24	DARLINGTON, 1928.
„ <i>communis</i>	8		KOBEL, 1928.
„ <i>communis</i> var. <i>persicoi-</i>			
des	8		„ „
„ <i>fruticosa</i>	16		DARLINGTON, 1928.
„ <i>hortulana mineri</i> „Sur-			
prise”		20	DORSEY, M. 1919.
„ <i>insititia</i>		48	CRANE, 1927.
	24		DARLINGTON, 1928.
„ <i>insititia</i> var. „King of			
the Damsons” (selfed			
seedling)		48	DARLINGTON, 1928.
„ <i>pennsylvanica</i>		20	DORSEY, M. 1919.
„ <i>Americana</i> × <i>triflora</i>			
„Stella”	10		„ „ „
„ <i>Besseyi</i> × (<i>P. Munso-</i>			
<i>niana</i> × <i>triflora</i>)			
„Opata”	ca. 10		„ „ „
„ <i>cerasifera</i> × <i>P. domes-</i>			
<i>tica</i>	16		DARLINGTON, 1927b.
„ <i>domestica</i> × <i>P. cerasifera</i> .		32	CRANE, 1927.
„ <i>domestica</i> var. <i>Jeffer-</i>			
<i>son</i> × <i>P. cerasifera</i>			
var. „Myrobolan Red”			
Seedling		32	DARLINGTON, 1928.
„ <i>insititia</i> × <i>P. spinosa</i> .		40	CRANE, 1927.
„ <i>insititia</i> var. „King of			
the Damsons” × <i>P.</i>			
<i>spinosa</i> seedling. . .		40	DARLINGTON, 1928.
„ <i>persica</i> × <i>P. amygdalus</i>			
seedling		16	„ „
„ <i>triflora</i> × <i>P. America-</i>			
<i>na mollis</i> , „Minnesota			
# 12”.	10		DORSEY, M. 1919.
„ <i>triflora</i> × <i>P. persica</i>			
seedling		16	DARLINGTON, 1928.
„ <i>triflora</i> var. „Shiro” ×			
<i>P. cerasifera</i> var. „Pis-			
<i>sardii</i> ” seedling” . .		16	„ „
„ <i>triflora</i> × <i>P. Simonii</i>			
(?) var. „Maynard” .		16	„ „

ROSACEAE (continued)

n

2n

PRUNUS (continued)

Prunus Seedlings:

<i>Big. Napoleon</i> × <i>Big. de Schrecken</i>	16, 18	CRANE, 1927.
<i>Big. Napoleon</i> × <i>Big. de Schrecken</i> (tall)	18	DARLINGTON, 1928.
<i>Big. Napoleon</i> × <i>Big. de Schrecken</i> (dwarf)	16	" "
<i>Big. de Schrecken</i> × <i>Black Tartarian B.</i>	16	CRANE, 1927; DARLINGTON, 1928.
<i>Big. Kentish</i> × <i>Morello.</i>	24, 32	CRANE, 1927.
<i>Kentish Bigarreau</i> × <i>Morello</i> (seedling- ¹)	32	DARLINGTON, 1928.
<i>Kentish Bigarreau</i> × <i>Morello</i> (seedling- ²)	24	" "
<i>Bohemian Black</i> × <i>Kentish Red</i>	26	CRANE, 1927.
<i>Bohemian Black Bigarreau</i> × <i>Kentish Red</i> „A”	26	DARLINGTON, 1928.
<i>Bohemian Black Bigarreau</i> × <i>May Duke</i>	24, 25 ¹)	" "
<i>Bohemian Black Bigarreau</i> × <i>Reine Hortense</i>	24	" "
<i>Elton</i> × <i>Wye Morello</i>	24, 26	CRANE, 1927.
	26(?)	DARLINGTON, 1928.
<i>Emperor Francis</i> × <i>Bigarreau Frogmore</i> ²)	32	CRANE, 1927.
<i>Emperor Francis</i> × <i>Governor Wood</i> (tall)	18	DARLINGTON, 1928.
<i>Emperor Francis</i> × <i>Governor Wood</i> (dwarf)	16	" "
<i>Empress Eugenie</i> (selfed)	32	CRANE, 1927; DARLINGTON, 1928.
<i>Governor Wood</i> × <i>Black Tartarian B.</i>	16	CRANE, 1927.
<i>Governor Wood</i> × <i>Black Tartarian</i>	16	DARLINGTON, 1928.
<i>Guigne de Winkler</i> ³) × <i>May Duke</i>	32	" "

¹) Only one seedling of this cross had 25 chromosomes, while four had 24 chromosomes.

²) For *Bigarreau Frogmore* $2n = (? 16-19)$.

³) For *Guignede Winkler* $2n = (? 16-19)$.

ROSACFAE (continued)	n	2n	
PRUNUS (continued)			
<i>Kentish Red „A”</i> (selfed) . . .		32	CRANE, 1927, DARLINGTON, 1928.
<i>May Duke</i> × <i>Yellow Spanish</i>		19	CRANE, 1927; DARLINGTON, 1928.
<i>Morello</i> × <i>May Duke</i> . . .		32	CRANE, 1927, DARLINGTON, 1928.
<i>Waterloo</i> × <i>Black Eagle</i> . .		16, 19	CRANE, 1927. DARLINGTON, 1928.
<i>Wye Morello</i> (selfed) . . .		32	CRANE, 1927; DARLINGTON, 1928.
<i>Wye Morello</i> × <i>Napoleon</i> .		23, 24	CRANE, 1927. 23 DARLINGTON, 1928.
<i>Cerisier „Montmorency Pleureur”</i>	16		” ”
<i>Mahaleb Seedling</i>		16	” ”
<i>Seedling C 12</i> ¹⁾		19	” ”
<i>Osmaronia cerasiformis</i> GREENE (= <i>Nuttallia cerasiformis</i> TORR. et Gr.) . .	6		KOBEL, 1927.
LEGUMINOSAE			
<i>Cassia fistula</i>	12		TISCHLER, 1921–22.
” <i>tomentosa</i> L.	12		HUS, 1904.
	12	24	SAXTON, 1907.
<i>Lupinus albus</i>		ca. 40	DE SMET, 1914.
” <i>luteus</i>		44–46	HEITZ, 1926.
<i>Cytisus Adami</i> (= <i>Laburnum Adami</i>).		48	ISHIKAWA, 1916.
	24	48	STRASBURGER, 1905b, 1907.
” <i>Laburnum</i> (= <i>Laburnum vulgare</i>)	24	48	STRASBURGER, 1905b, 1907.
” <i>nigricans</i> L.	24		DE VILMORIN & SIMONET, 1927b.
” <i>purpureus</i>	24	48	STRASBURGER, 1905b, 1907.
MEDICAGO ²⁾			
Section <i>Falcago</i>			
<i>Medicago sativa</i>		32	GHIMPU, 1928.
Section <i>Lupularia</i>			
<i>Medicago lupulina</i>		16	GHIMPU, 1928.

¹⁾ This seedling was distinguishable from all the edible varieties studied, because of the exceptional irregularity of its divisions.

²⁾ Classification under sections is according to ENGLER & PRANTL.

LEGUMINOSAE (continued)	n	2n	
Section Spirocarpos			
<i>Medicago disciformis</i>		16	GHIMPU, 1923.
„ <i>Echinus</i>		16	„ „
„ <i>Fenoreana</i>		16	„ „
„ <i>Helix</i>		16	„ „
„ <i>maculata</i>		16	„ „
„ <i>minima</i>		16	„ „
„ <i>orbicularis</i>		16	„ „
„ <i>rigidula</i>		16	„ „
„ <i>scutellata</i>		16	„ „
„ <i>sphaerocarpa</i>		16	„ „
„ <i>tornata</i>		16	„ „
„ <i>truncatula</i>		16	„ „
<i>Melilotus alba</i> DESR.	8		CASTETTER, 1923.
„ <i>alba</i>	8		„ 1925.
TRIFOLIUM ¹⁾			
Section Tridentatae			
<i>Trifolium obtusiflorum</i> HOOK (2 strains)		16	WEXELSEN, 1928
„ <i>obtusiflorum</i> var <i>ma-</i> <i>jus</i> (<i>T. majus</i> GREE- NE)		16	„ „
Section Variegatae			
<i>Trifolium variegatum</i> NUTT.		16	WEXELSEN, 1928.
„ <i>wormskjoldii</i> LEHM.		48(?)	„ „
Section Cyathiferae			
„ <i>microcephalum</i> PURSH.		16	„ „
Section Vesiculeae			
<i>Trifolium furcatum</i> LINDL.		16	„ „
„ <i>furcatum</i> var. <i>vires-</i> <i>cens</i> (<i>T. virescens</i> GREENE).		16	„ „
Section Macraeae			
<i>Trifolium albopurpureum</i> . T. and G.		16	„ „
„ <i>dichotomum</i> H. and A.		32	„ „
Section Longifoleae			
<i>Trifolium reflexum</i> L.		16	WEXELSEN, 1928.
Section Ciliateae			
<i>Trifolium ciliolatum</i> BENTH. (<i>T.</i> <i>ciliatum</i> NUTT.)		16	„ „

¹⁾ Classification under sections is according to McDWOMOTT (1910).

LEGUMINOSAE (continued)	n	2n
Section <i>Eumoria</i>		
<i>Trifolium repens</i> var. <i>sylvestre</i> (<i>hollandicum</i>)		32 ¹⁾ ERITH, 1924.
" <i>repens</i> var. <i>sylvestre</i> (<i>giganteum</i>)		32 ¹⁾ " "
<i>Wistaria brachybotrys</i>	8	JIMBO, 1927.
" <i>floribunda</i>	8	" "
" <i>floribunda</i> Dc. var. <i>alba</i> REHDER & WILSON ²⁾	8	ROSCOE, 1927a
" <i>floribunda</i> Dc. var. <i>Macrobotrys</i> REH- DER & WILSON ³⁾	8	" "
" <i>floribunda</i> Dc. var. <i>rosea</i> REHDER & WILSON ⁴⁾	8	" "
<i>Wistaria frutescens</i> (L.) POIR. var. <i>alba</i> REHDER & WILSON	8	ROSCOE, 1927a.
" <i>macrostachya</i> NUTT. ⁴⁾	8	" "
" <i>sinensis</i> SWEET ⁵⁾	8	" "
" <i>venusta</i> REHDER & WILSON ⁶⁾	8	" "
<i>Colutea arborescens</i>		10-18 NĚMEC, 1910.
<i>Cicer arietinum</i> L.		14 ⁷⁾ DOMBROWSKY-SLUDSKY, 1927.
VICIA ⁸⁾		
Section I		
<i>Vicia Faba</i>		12 NEMEC ⁹⁾ , 1904, 1910; FRANCK, 1911; STRASBURGER, 1911; LUNDEGARDH, 1914a; SHARP 1914; VAN REGEMORTER, 1926-27. ca.12-15 LUNDEGARDH, 1910, 1912. 6 12 SAKAMURA, 1915, 1920.

¹⁾ In previous list, GAISER (1926), 16 was incorrectly given in the diploid column, though foot-note stated there were 32 diploid chromosomes.

²⁾ Meiotic divisions were irregular.

³⁾ Meiotic divisions were regular.

⁴⁾ Not sufficient material was available „to furnish a clear idea of the progress of the divisions.

⁵⁾ The chromosomes showed tardiness in forming the metaphase plate but usually arrived at the poles in time to form normal pollen tetrads.

⁶⁾ Polyspory was frequent in this species.

⁷⁾ One pair of chromosomes had „acolytes” (satellites).

⁸⁾ Classification under Sections is according to ASCHERSON and GRAEBNER (1906-1910).

⁹⁾ In root-tips treated with chloral hydrate syndiploid nuclei with 24 chromosomes were found.

LEGUMINOSAE (continued)		n	2n	
VICIA (continued)				
<i>Vicia Faba</i> L.			12	HOROVITZ, 1926, SCHWESHNIKOWA, 1927.
Section II				
Subsection I				
Group Ervum				
<i>Vicia disperma</i> Dc.			14	NIKOLAJEWA (given by Schwesnikowa, 1927).
„ <i>Ervilia</i> Willd.			14	NIKOLAJEWA (given by Schwesnikowa, 1927); Schwesnikowa, 1927.
„ <i>hirsuta</i> S. E. Gray			14	NIKOLAJEWA (given by Schwesnikowa, 1927); Schwesnikowa, 1927.
„ <i>monantha</i> Desf.			14	NIKOLAJEWA (given by Schwesnikowa, 1927); Schwesnikowa, 1927.
Group Cracca				
Subgroup Vicilla				
<i>Vicia orobus</i> Dc.			12	Schwesnikowa, 1927.
„ <i>pseudorobus</i>			12	Sakamura, 1920.
„ <i>silvatica</i> L.			14	Schwesnikowa, 1927.
„ <i>unijuga</i>			24	Sakamura 1916 (given by Ishikawa, 1916).
„ <i>unijuga</i> A. Br.	12		24	Sakamura, 1920.
			12	Schwesnikowa, 1927.
Subgroup Eucracca				
<i>Vicia amoena</i> Fisch			24	„ „
„ <i>atropurpurea</i>			14	Sakamura, 1920.
„ <i>atropurpurea</i> Desf. . . .			14	Schwesnikowa, 1927.
„ <i>cracca</i> L.	6		12	Sakamura, 1914, 1920.
			12 ¹⁾ & 28	Schwesnikowa, 1927.
			12 ²⁾ , 14,	
			28 ³⁾	„ 1928.
„ <i>dasycarpa</i> Ten.			14	NIKOLAJEWA (given by Schwesnikowa, 1927; Schwesnikowa, 1927).
„ <i>picta</i> Fisch. u. Mey. . . .			14	Schwesnikowa, 1927.
„ <i>pseudo-cracca</i>			14	Sakamura, 1920.

¹⁾ Of 10 samples of *V. cracca* from different localities in Germany and Russia, only one showed 12 chromosomes.

²⁾ Of 20 plants with 12 chromosomes, only 3 over-wintered and these were chlorotic and slow to bloom.

³⁾ The tetraploid form had only one pair of satellites, whereas the diploid had two pairs.

LEGUMINOSAE (continued)	n	2n	
Vicia (continued)			
Group Cracca (continued)			
<i>Vicia pseudo-cracca</i> BERTOL.	14		SCHWESHNIKOWA, 1927.
„ <i>tenuifolia</i> ROTH.	24		„ „
„ <i>villosa</i> ROTH.	14		„ „
Subsection II. Euvicia			
<i>Vicia angustifolia</i> L.	12		NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
„ <i>angustifolia</i> ¹⁾	12		SCHWESHNIKOWA, 1928.
„ <i>amphiocarpa</i> (= <i>V. angustifolia variifolia</i> , <i>V. lathyroides</i>)	14		„ „
„ <i>bithynica</i> L.	14		NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
„ <i>grandiflora</i> SCOP.	14		SCHWESHNIKOWA, 1927.
„ <i>hybrida</i> L.	12		SCHWESHNIKOWA, 1927.
„ <i>lutea</i> L.	14		„ „
„ <i>macrocarpa</i> MOR.	12		„ „
„ <i>narbonensis</i> L.	14		„ „
„ <i>pannonica</i> CRANTZ.	12		„ „
„ <i>peregrina</i> L.	14		„ „
„ <i>sativa</i>	12		(SAKAMURA) given by ISHIKAWA, 1916.
	6	12	SAKAMURA, 1920, BLEIER, 1928a.
„ <i>sativa</i> L.	12		SCHWESHNIKOWA, 1927.
„ <i>sepium</i> L.	14		(NIKOLAJEWA) given by SCHWESHNIKOWA, 1927.
„ <i>serratifolia</i> JACQ.	14		SCHWESHNIKOWA, 1927.
Section (?)			
<i>Vicia gracilis</i> LOIS.	14		„ „
„ <i>tetrasperma</i> MOENCH	14		„ „
<i>Lens esculenta</i>	14		SAKAMURA, 1920; HEITZ, 1926.
„ <i>esculenta</i> MOENCH	14		BLEIER, 1928a.
„ <i>esculenta</i> × <i>Vicia sativa</i>	6	12	„ „
<i>Lathyrus latifolius</i> L.	7	14	WINGE, 1919.
„ <i>odoratus</i>	7		LATTER, 1926; PUNNETT, 1927.
„ <i>odoratus</i> L.	7	14	WINGE, 1919; MAEDA, 1928.
„ <i>vernus</i>		14	SAKAMURA, 1920.

¹⁾ A typical form is cytologically distinguished from a larger form by the elongated arm of the „A” chromosome of the latter.

LEGUMINOSAE (continued)		n	2n	
<i>Pisum sativum</i>			14	NĚMEC, 1903a ¹⁾ , b, 1904; KEMP, 1910 ¹⁾ ; (SAKAMURA, 1916) given by ISHIKAWA, 1916; SAKAMURA, 1920; HEITZ ²⁾ 1926; DOMBROWSKY -SLUDSKY ³⁾ ; 1927.
		7		STRASBURGER ¹⁾ 1907; BATE- TESON & PELLEW, 1920; DE WINTON, 1928.
		7	14	STRASBURGER ¹⁾ , 1911.
„ <i>sativum</i> „Debarbieux”		7		CANNON, 1903b.
„ <i>sativum</i> „Fillbasket”		7		„ „
„ <i>sativum</i> „Pois turc”			14	WELLENSIEK, 1925a, b.
„ <i>sativum</i> „Chatenay Pois”			14	„ „
„ <i>sativum</i> „Serpette”		7		CANNON, 1903b.
„ <i>sativum</i> race „Swaleuf”				
(No. 27 original Soloerbse)			14 ⁴⁾	DOMBROWSKAJA, 1924.
„ <i>sativum</i> mutant <i>fasciata</i>		7		WINGE, 1925.
„ <i>sativum</i> (rogue type)		7		BATESON & PELLEW, 1920; WINGE, 1920.
„ <i>sativum</i> „Express” × „Serpette”		7	14	CANNON, 1903b.
„ <i>sativum</i> „Fillbasket” × „Debarbieux”		7	14	„ „
„ (diverse forms)			14	GRÉGOIRE, 1912.
<i>Soja hispida</i> (probably = <i>Gly-</i> <i>cine soja</i>)			20	KARPECHENKO, 1925.
<i>Glycine Soja</i> (Akasaya)			38	YAMAHA & SINOTO, 1925.
<i>Phaseolus multiflorus</i>		12		KLEINMAN, 1923.
✓ <i>Phaseolus multiflorus</i> WILLD.			22	KARPECHENKO, 1925.
„ <i>radiatus</i> L. var. <i>Au-</i> <i>rea</i> PRIN „Shona- <i>gon</i> ”			22	KATAYAMA, 1928.
„ <i>radiatus</i> L. var. <i>fle-</i> <i>xuosus</i> MATSUM			22	„ „
„ <i>vulgaris</i>			22	WEINSTEIN, 1926.
„ <i>vulgaris</i> L.			22	KARPECHENKO, 1925.

¹⁾ These investigators found syndiploid nuclei ($2n = 23$) in cells of the root-tips after treating with chloral hydrate.

²⁾ HEITZ found the same number in both short and tall forms.

³⁾ The investigator found that one pair of chromosomes had „acolytes” (satellites).

⁴⁾ Two pairs of chromosomes possessed „acolyres” (satellites). Sometimes 16 chromosomes or a syndiploid number were found.

LEGUMINOSAE (continued)	n	2n
<i>Phaseolus</i> (continued)		
<i>Phaseolus vulgaris</i> × <i>P. multiflorus</i>		22 ¹⁾ KARPECHENKO, 1925.
<i>Dolichos multiflorus</i>		24 NĚMEC, 1910.

GERANIALES

GERANIACEAE

<i>Geranium pratense</i> L.	12	TJEBBES, 1928.
" <i>pyrenaicum</i>		21, 22-24 HEITZ, 1926.
" <i>sylvaticum</i> L.	12	TJEBBES, 1928.
" spec. cult. hort.		18 HEITZ, 1926.
<i>Erodium cicutarium</i>	36-(38)	" "

PELARGONIUM ²⁾Section *Dibrachya*

<i>Pelargonium peltatum</i> AIT. var.		
<i>scutatum</i> HAV.	18	36 TAKAGI, 1928b.

Section *Ciconium**Pelargonium hortorum* class.:

<i>Kinsekai</i>	9	18	"	"
<i>Manazuru</i>		18	"	"
<i>Kakuremino</i>		18	"	"
<i>Kirin</i>		18	"	"
<i>Lady Thomson</i>		18	"	"
<i>Shirataka</i>		18	"	"
<i>Pelargonium inquinans</i> AIT.	9	18	"	"
" <i>zonale</i> WILLD.				
(<i>Koshinoyuki</i>)	18 ³⁾	36 ⁴⁾	"	"

Section *Cortusina*

<i>Pelargonium odoratissimum</i> AIT.	8	16	"	"
---------------------------------------	---	----	---	---

Section *Pelargonium*

<i>Pelargonium denticulatum</i> JACQ.		90	"	"
" <i>domesticum</i> class. ca. 27 ⁵⁾		45	"	"
" <i>glutinosum</i> L'HER.		90	"	"
" <i>gravecolens</i> L'HER.	45	90	"	"
" <i>quercifolium</i> AIT.		45	"	"
" <i>radula</i> L'HER. . . ca. 41 ⁶⁾		81	"	"
" <i>tomentosum</i> JACQ.		45	"	"

¹⁾ Evidently univalent chromosomes are absent in this almost sterile hybrid but sometimes a pair of gemini lie apart on the equatorial plate.

²⁾ Classification under Sections is according to ENGLER & PRANTL.

³⁾ In midwinter non-conjunction occurred (36 univalents) and gave diads instead of tetrads.

⁴⁾ A few cells showed 72 chromosomes. There was no variation in the albino branches.

⁵⁾ Some of these chromosomes were univalents. In the homeotypic nuclear plates 22 and 23 were the most common numbers, though they varied from 20 to 25.

⁶⁾ Some of these chromosomes appeared to be univalents.

OXALIDACEAE

	n	2n	
<i>Oxalis acetosella</i>		22-24	HEITZ, 1927b. ¹⁾
" <i>adenophylla</i>		28	" "
" <i>articulata</i>		14	" "
" <i>articulata</i> var. <i>hirsuta</i> .		14	" "
" <i>asinina</i>		(28)	" "
" <i>brasiliensis</i>		14	" "
" <i>bupleurifolia</i>		10	" "
" <i>caprina</i>		(20)	" "
" <i>carnosa</i>		14	" "
" <i>consolida</i>		14	" "
" <i>crenata</i>		14	" "
" <i>Deppei</i>		14	" "
" <i>Drummondii</i>		14-16	" "
" <i>esculenta</i>		14	" "
" <i>incarnata</i>		14	" "
" <i>lasianдра</i>		28-(32)	" "
" <i>Ortgiesi</i>		14	" "
" <i>pallescens</i>		14-16	" "
" <i>pentaphylla</i>		28-30	" "
" <i>purpurata</i>		(26)-28	" "
" <i>purpurata</i> var. <i>Boviei</i> .		28	" "
" <i>rhombifolia</i>		> 80	" "
" <i>rosea</i>		(14)	" "
" <i>rubella</i>		ca. 28	" "
" <i>rubra</i>		(42)	" "
" <i>Smithiana</i>		(14)	" "
" <i>tenuifolia</i>		ca. 28	" "
" <i>truncatula</i>		(42)	" "
" <i>umbrosa</i>		14	" "
" <i>versicolor</i>		14	" "
" <i>vespertilionis</i>		14	" "
" <i>vinata</i>		(14)	" "
" <i>violacea</i>		ca. 28	" "
" <i>spec.</i>		ca. 42	" "

TROPAEOLACEAE

<i>Tropaeolum canariense</i>		26-30	" "
" <i>hobbianum</i>		ca. 28	" "
" <i>majus</i> L.	14		SUGIURA, 1925a.
" <i>majus</i>	14		WINGE, 1925; BOLENBAUGH, 1928.
		27-28	HEITZ, 1926.

¹⁾ Though HEITZ (1927b) gives the haploid numbers as half of these given diploid numbers, I have chosen to give these since his figures are all of somatic cells showing the diploid chromosome sets.

TROPAEOLACEAE (continued)

<i>Tropaeolum</i> (continued)	n	2n	
<i>Tropaeolum minus</i>		27-29	HEITZ, 1926.
" <i>peregrinum</i>	12	24	SUGIURA, 1928b.

LINACEAE

<i>Linum alpinum</i> JACQ.	18	36	KIKUCHI, 1926.
" <i>alpinum</i> L.	9		DE VILMORIN & SIMONET, 1927b
" <i>americanum</i> L. var. <i>album</i>	15	30	KIKUCHI, 1926.
" <i>angustifolium</i>		30	TAMMES, 1923.
" <i>angustifolium</i> HUDS.	9	18	KIKUCHI, 1926.
	15		DE VILMORIN & SIMONET 1927b
		32	MARTZENITZINA, 1927.
" <i>austriacum</i> L.	9	18	KIKUCHI, 1926.
		18	MARTZENITZINA, 1927.
" <i>campanulatum</i> L.	14		DE VILMORIN & SIMONET 1927b
" <i>capitulum</i> KIT.	12	24 (?)	KIKUCHI, 1926.
" <i>catharticum</i> L.	8		DE VILMORIN & SIMONET 1927b
		> 57	MARTZENITZINA, 1927.
" <i>corymbiferum</i> DESF.	15	30	KIKUCHI, 1926.
		18	MARTZENITZINA, 1927.
" <i>flavum</i> L.		30	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		30, 32	MARTZENITZINA, 1927.
" <i>grandiflorum</i> DESF.	9		KIKUCHI, 1926.
	8		DE VILMORIN & SIMONET 1927b.
		16	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		16, 17	MARTZENITZINA, 1927.
" <i>hirsutum</i> L.	8		DE VILMORIN & SIMONET 1927b.
" <i>Lewisii</i> PURSH.	9	18	KIKUCHI, 1926.
" <i>maritimum</i> L.	10		DE VILMORIN & SIMONET 1927b.
" <i>nervosum</i> WALDST.	15		" "
" <i>perenne</i> L.	9	18	KIKUCHI, 1926.
	9		DE VILMORIN & SIMONET 1927b.
			(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		18	MARTZENITZINA, 1927.
" <i>punctatum</i> PR.		18	" "
" <i>salsoloides</i> LAM.	9		DE VILMORIN & SIMONET, 1927b
" <i>Sibiricum</i> Dc. (<i>perenne</i> L. var.)	9	18	KIKUCHI, 1926.
" <i>strictum</i> L.	9		DE VILMORIN & SIMONET, 1927b
" <i>tenuifolium</i> L.	9		" "
		18	MARTZENITZINA, 1927.

LINACEAE(continued)	n	2n	
<i>Linum</i> (continued)			
<i>Linum usitatissimum</i>		30	(REYNDER) given by TAMMES, 1922.
„ <i>usitatissimum</i> GRISEB.	15		DE VILMORIN & SIMONET 1927 ^b
„ <i>usitatissimum</i> L.	15	30	KIKUCHI, 1926.
		32	MARTZENITZINA, 1927.
		30	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
„ <i>usitatissimum</i> L. ¹⁾		32	EMME & SCHEPELJEVA, 1927.
„ <i>usitatissimum</i> L. (Race 383)		30	„ „ „ „
„ <i>usitatissimum</i> L. (Egyptian race)	16	32	„ „ „ „
„ <i>usitatissimum</i> var. <i>crepitans</i> BÖNNINGH	15, 16	32	„ „ „ „
RUTACEAE			
<i>Erythroxylon brasiliense</i>		89—90	HEITZ, 1926.
(<i>Fortunella margarita</i> × <i>Citrus aurantiifolia</i>) × <i>Fortunella hindsii</i>	13, 13+1 ₁		LONGLEY, 1926 ^b .
POLYGALACEAE			
<i>Epirrhizanthes elongata</i> BL.	24 ²⁾		WIRZ, 1910.
	22		SHADOWSKY, 1911.
<i>Salomonina</i> (= <i>Epirrhizanthes cylindrica</i> BL.)	11		SHADOWSKY, 1911.
EUPHORBIACEAE			
<i>Daphniphyllum macropodium</i> Miq.	16 ³⁾		SINÔTO, 1928 ^a .
„ <i>macropodium</i>	16		SIGUURA, 1928 ^a .
<i>Mercurialis annua</i>	6	12	MALTE, 1908, 1910.
	7		STRASBURGER, 1909 ^a , ^b .
	8	16	STRASBURGER, 1910 ^b ; YAMPOLSKY, 1925.
		16 & 32 ⁴⁾	(NIHOUS) given by de Litardiere, 1925.
<i>Mercurialis perennis</i>	> 32		MEURMAN, 1925 ^a .
<i>Ricinus communis</i>		20 ⁵⁾	NĚMEC, 1910 ^a ; SUESSENGUTH, GUTH, 1921.
„ <i>communis</i> . . L.		20	TAYLOR, 1926

¹⁾ Fifteen races from different geographical areas were investigated and of these only one showed $2n = 30$.

²⁾ Counts showed variation from 20 to 24.

³⁾ A pair of unequal chromosomes were distinguishable.

⁴⁾ Sixteen chromosomes were found in the cells of the perome of the root-tip and 32 in the cells of the periblem.

⁵⁾ Syndiploid nuclei were found in roots treated by chloral hydrate.

EUPHORBIACEAE (continued)		n	2n	
<i>Ricinus</i> (continued)				
<i>Ricinus zanzibarensis</i>			20	NĚMEC, 1910a.
<i>Hevea brasiliensis</i> MÜLL. ARG.	8			HEUSSER, C., 1919.
<i>Euphorbia helioscopia</i>			12	NĚMEC, 1910a.
„ <i>hypericifolia</i>			16	MALTE, 1908.
„ <i>procera</i> BIEB.	ca. 8			MODILEWSKI, 1910
<i>Poinsettia</i> (= <i>Euphorbia</i>) <i>pulcherrima</i> R. GRAH.	10			CARANO, 1915.
<i>Euphorbia splendens</i>	12			WENIGER, 1917
SAPINDALES				
EMPETRACEAE.				
<i>Empetrum hermaphroditum</i>				
(LGE.) HAGERUP	26 ¹⁾			HAGERUP, 1927.
„ <i>nigrum</i>	ca. 30			SAMUELSON, 1913.
„ <i>nigrum</i> L.	13 ²⁾			HAGERUP, 1927.
CORIARIACEAE				
<i>Coriaria myrtifolia</i>	ca. 40	ca. 80		GRIMM, 1912.
ANACARDIACEAE				
<i>Rhus Toxicodendron</i>	15			„ 1912.
STAPHYLEACEAE				
<i>Staphylea pinnata</i>	12 ³⁾			WINGE, 1917.
„ <i>trifolia</i> L.	ca. 36			MOTTIER, 1914.
ACERACEAE				
<i>Acer carpinifolium</i>		52		TAYLOR, 1920.
„ <i>negundo</i> L.	13			DARLING, 1909.
	12 or 14			MOTTIER, 1914.
„ <i>negundo</i>	13			TAYLOR, 1920.
„ <i>pseudoplatanus</i>	26	52		„ „
„ <i>rubrum</i>	40			DARLING, 1912.
	36			MOTTIER, 1914; TAYLOR, 1920.
	ca. 50	88-94		TAYLOR, 1920.
	68-75			„ „
„ <i>saccharinum</i>	26	52 & ca. 91		„ „
„ <i>saccharum</i>	13			„ „
HIPPOCASTANACEAE				
<i>Aesculus arguta</i> BUCKLEY ⁴⁾ .	20			HOAR, 1927.
„ <i>discolor</i> var. <i>mollis</i> N.				
var. ⁴⁾	20			„ „
„ <i>georgiana</i> SARG. ⁴⁾ . .	20			„ „

¹⁾ Two pairs of XY chromosomes, similar to those found in *E. nigrum* L. were found in the divisions of the pollen-mother-cells.

²⁾ A pair of larger XY chromosomes was found in the divisions of pollen-mother cells.

³⁾ Once 13 chromosomes were found.

⁴⁾ Meiotic division was very irregular.

HIPPOCASTANACEAE (continued)		n	2n	
<i>Aesculus</i> (continued)				HOAR, 1927.
	<i>Aesculus glabra</i> WILLD. ¹⁾	20		
"	<i>glabra</i> var. <i>leucodermis</i> SARG. ²⁾	20		" "
"	<i>harbisonii</i> SARG. (= <i>A. discolor</i> var. <i>mollis</i> N. var. × <i>A. georgiana</i> SARG.) ²⁾	20		" "
"	<i>hippocastanum</i> L. ¹⁾	20		" "
"	<i>hippocastanum</i> var. <i>Baumannii</i> SCHNEID.	20		" "
"	<i>mutabilis</i> var. <i>induta</i> N. hyb. SARG. ²⁾	20		" "
"	<i>mutabilis</i> var. <i>pendulifolia</i> SARG. (= <i>discolor</i> var. <i>mollis</i> N. var. × <i>A. neglecta</i> SARG.) ²⁾	20		" "
"	<i>octandra</i> MARSH (Sweet Buckeye) (= <i>A. flava</i> Ait) ³⁾	20		" "
"	<i>octandra</i> var. <i>discolor</i> REHDER ²⁾	20		" "
"	<i>octandra</i> var. <i>hybrida</i> D. C. Sargent (= <i>A. octandra</i> MARSH × <i>A. pavia</i> L.) ²⁾	20		" "
"	<i>rubicunda</i> LOIS (<i>A. carnea</i> HAYNE) (= <i>A. hippocastanum</i> L. × ? <i>A. pavia</i> L.) ²⁾	20		" "
"	<i>rubicunda</i> var. <i>brioti</i> CARS. (<i>A. hippocastanum</i> L. × <i>A. pavia</i> L.) ²⁾	40		" "
"	<i>woerlitzensis</i> KOHNE. E. ²⁾	20		" "
BALSAMINACEAE				
	<i>Impatiens pallida</i> NUTT.	12		RAITT, 1916.
"	<i>parviflora</i>		20	HEITZ, 1924.
"	<i>Sultani</i> HOOK.	ca. 7		OTTLEY, 1918.

¹⁾ Meiotic division was quite regular.²⁾ Meiotic division was very irregular.³⁾ Meiotic division was regular except in cells of one tree growing in the Harvard Bot. Gard. under the name *A. flava*.

RHANNALES	n	2n	
VITACEAE			
<i>Cissus gongyloides</i>		32	LANGLET, 1927b.
MALVALES			
TILIACEAE			
<i>Tilia platyphyllos</i>	30-33 ¹⁾		SVENSSON-STENAR, 1925.
MALVACEAE			
<i>Malva palmata</i>	ca. 20	"	"
" <i>pusilla</i>	20-30	"	"
<i>Sidalcea neomexicana</i> A. GRAY.	13		TJEBBES, 1928.
<i>Hibiscus rosa sinensis</i>	72		YOUNGMAN, 1927
" <i>tricuspis</i>	40	"	"
" <i>tiliaceus</i>	48	"	"
<i>Thespesia populnea</i>	8, 10, 13 ²⁾	"	"
<i>Gossypium barbadense</i>		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
	8, 13 ³⁾		YOUNGMAN, 1927.
" <i>barbadense</i> var. <i>maritima</i> WATT.	26		DENHAM, 1924.
" <i>barbadense</i> L. var. <i>Pima</i> (Egyptian)	26		BEAL, 1928.
" <i>barbadense</i> L. (Sea Island Commercial var.)	26		" 1928.
" <i>herbaceum</i> L. ⁴⁾	26		(NIKOLAJEWA) given by Zaitzev, 1923.
" <i>hirsutum</i> L. ⁴⁾	52		(NIKOLAJEWA) given by Zaitzev, 1923.
" (Commercial cotton, near <i>G. hirsutum</i>)	26		DENHAM, 1924.
" <i>hirsutum</i> L. var. Miller	26		BEAL, 1928.
" <i>hirsutum</i> L. var. Trice	26	"	"
" <i>hirsutum</i> L. var. Triumph	26	"	"

¹⁾ From 90 to 100 chromosomes were counted in a metaphase plate in an edosperm cell.

²⁾ On heterotypic equatorial plates 13 bodies massed together at the centre as 8. In hemeotypic equatorial plates 10 and 13 chromosome bodies appeared respectively in the sister cells and in the pollen tetrad, three nuclei contained 10 chromosomes and one nuclei, 13.

³⁾ Only 8 bodies were seen on the equatorial plate.

⁴⁾ A hybrid was obtained between *G. herbaceum* L. (*Buchaskaja Gusa*) and *G. hirsutum* L. var. *laciniata* M. but the chromosome number was not determined.

MALVACEAE (continued)	n	2n	
<i>Gossypium</i> (continued)			
<i>Gossypium mexicanum</i>		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
<i>Acala</i> (<i>G. mexicanum</i> type) . .	26		DENHAM, 1924.
<i>Gossypium</i> Nanking		26	(NIKOLAJEWA) given by ZAITZEV, 1923.
" <i>obtusifolium</i>		26	(NIKOLAJEWA) given by ZAITZEV, 1923.
" <i>punctatum</i>		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
" <i>barbadense</i> × <i>herbaceum</i>	28		CANNON, 1903a.
STERCULIACEAE			
<i>Theobroma cacao</i>	3	16	KUYPER, 1914.
		16	CHEESMAN, 1927.
CAMELLIACEAE			
<i>Camellia theifera</i> (Griff.) DYER (= <i>Thea sinensis</i>)	15		COHEN STUART 1916.
PARIETALES			
GUTTIFERAE			
<i>Hypericum calycinum</i>	10		CHATTAWAY, 1926.
" <i>elegans</i>	16		" "
" <i>humitutum</i>	3		WINGE, 1925; CHATTAWAY, 1926.
" <i>pulchrum</i>	9		CHATTAWAY, 1926.
" <i>quadangrulum</i>	3		WINGE, 1925; CHATTAWAY, 1926.
<i>Garcinia Treubii</i> PIERRE	ca. 48		TREUB, 1911.
ELATINACEAE			
<i>Elatine Hydropiper</i> L.	20		FRISSENDAHL, 1927.
TAMARICACEAE			
<i>Myricaria germanica</i> DESV.	12		FRISSENDAHL, 1912.
CISTACEAE			
<i>Cistus albidus</i> L.	9		CHIARUGI, 1925.
" <i>laurifolius</i> L.	9		" "
" <i>monspeliensis</i> L.	9		" "
" <i>salviaefolius</i>	8		" 1924.
" <i>salviaefolius</i> L.	9		" 1925.
" <i>villosus</i> L.	9		" "
<i>Helianthemum alpestre</i> (JACQ.) DUNAL.	16		" "
" <i>apenninum</i> (L.) LAM. et DC.	16		" "

CISTACEAE (continued)	n	2n	
<i>Fumana arabica</i> (L.) SPACH. = <i>Helianthemum arabi-</i> <i>cum</i> PERS.	16		CHIARUGI, 1925.
" <i>procumbens</i> GREN. GODR. <i>Helianthemum</i> <i>Fumana</i> MILL.	16		" "
<i>Helianthemum Chamaecistys</i> MILL.	16		" "
<i>Tuberaria guttata</i>	24		" 1924.
" <i>guttata</i> (L. GROSS = <i>Helianthemum gut-</i> <i>tatum</i> MILL.	24		" 1925.
<i>Halimium halimifolium</i> (L.) WILLK et LANGE (= <i>Helianthemum</i> <i>halimifolium</i> WILLD.	9		" "
<i>Helianthemum ledifolium</i> (L.) MILL.	8		" "
" <i>polifolium</i>	8		" "
VIOLACEAE			
<i>Hybanthus parviflorus</i> (VENT.) BAILL.	12		HEILBORN, 1926.
VIOLA ¹⁾			
Section <i>Dischidium</i>			
<i>Viola biflora</i> L.	6		CLAUSEN, J., 1926, 1927b.
" <i>biflora</i>	6	12	GERSHOY, 1928.
Section <i>Chamaemelianum</i>			
<i>Viola canadensis</i>	12	24	GERSHOY, 1928.
" <i>eriocarpa</i>	6	12	" "
" <i>glabella</i>	6		MIYAJI, 1913, 1927a.
" <i>glabella</i> (American). . .	12	24	GERSHOY, 1928.
" <i>lobata</i>	6	12	" "
" <i>ocellata</i>	6	12	" "
" <i>praemorsa</i>	15	30	" "
" <i>pubescens</i>	6	12	" "
" <i>purpurea</i>	15	30	" "
" <i>rugulosa</i> GREENE.	12		CLAUSEN, J., 1926, 1927b.
" <i>rugulosa</i>	12	24	GERSHOY, 1928.
" <i>sarmentosa</i> .Q.	21	42	" "
Section <i>Melianum</i>			
<i>Viola alpestris</i> DC. (W. BECKR.)	13		CLAUSEN, J., 1926, 1927b.
" <i>arvensis</i> MURR. ²⁾	17		" J., 1921, 1922, 1924, 1926, 1927b.

¹⁾ Classification under sections is according to ENGLER & PRANTL.

²⁾ Three different types, Line 52, Type C, and Line I were used.

VIOLACEAE (continued) . . .		n	2n	
Viola (continued)				
Section <i>Melanium</i> (continued)				
<i>Viola arvensis</i>	18	36	GERSHOY, 1928.	
„ <i>calcarata</i> L. ¹⁾	20		CLAUSEN, J., 1926, 1927b.	
„ <i>cenisea</i> L.	10		CLAUSEN, J., 1927b.	
„ <i>cornuta</i> L.	10		HEILBORN, 1926.	
„	11		CLAUSEN, J., 1926, 1927b.	
„ <i>cornuta</i>	21	42	GERSHOY, 1928.	
„ <i>declinata</i> WALDST. et KIT.	10		CLAUSEN, J., 1927b.	
„ <i>elegantula</i> SCHOTT ²⁾	10		CLAUSEN, J., 1926, 1927b.	
„ <i>Kitaibeliana</i> ROEM. et SCHULT.	7		CLAUSEN, J., 1927b.	
„ <i>Kitaibeliana</i> ROEM. et SCHULT. (another variety)	ca. 12		CLAUSEN, J., 1927b.	
„ <i>Kitaibeliana</i> ROEM. et SCHULT. (astout variety)	18		CLAUSEN, J., 1926, 1927b.	
„ <i>lutea</i>	24	48	GERSHOY, 1928.	
„ <i>lutea</i> HUDS.	24		CLAUSEN, J., 1926.	
„ <i>lutea</i> HUDS. var. <i>calaminaria</i> LEJ.	ca. 24		„ „ 1927b.	
„ <i>lutea</i> HUDS. subs. <i>elegans</i> (KIRSCHL.) W. BECKR.	24		„ „ „	
„ <i>Munbyana</i> BOISS. et REUT. var. <i>Battandieri</i> (W. BECKR. pro spec.)	30		„ „ 1926, 1927b.	
„ <i>orphanidis</i> BOISS.	10+1 ₁		„ „ 1927b.	
„ <i>orthoceras</i> LEDEB.	11		„ „ 1926, 1927b.	
„ <i>Raffinesquii</i>	18	36	GERSHOY, 1928.	
„ <i>rothomagensis</i> DESF.	17		CLAUSEN, 1926, 1927b.	
„ <i>rothomagensis</i>	18	36	GERSHOY, 1928.	
„ <i>tricolor</i> var.	12	24	„ „	
„ <i>tricolor</i> var. α	12	24	„ „	
„ <i>tricolor</i> var. β	12	24	„ „	
„ <i>tricolor</i> var. γ	12	24	„ „	
„ <i>tricolor</i> L.	13		CLAUSEN, J., 1921, 1922, 1924, 1926, 1927b.	
„ <i>tricolor</i> L. type <i>alba</i>	13		CLAUSEN, J., 1927b.	
„ <i>tricolor</i> L. type <i>hortensis</i>	13		„ „ „	
„ <i>tricolor</i> L. type <i>lutea</i>	13		„ „ „	
„ <i>tricolor</i> L. type <i>maritima</i> , <i>rosea</i>	13		„ „ „	

¹⁾ CLAUSEN (1927) states that another type under the name *V. Bertolonii* Salis (= *corsica* ROUY et FOUC.) had $2n = 40$.

²⁾ This is synonymous with *V. latiseptala* WETTST. and *V. bosniaca* FORMANEK.

VIOLACEAE (continued)	n	2n	
VIOLA (continued).			
Section <i>Nominium</i> (continued)			
<i>Viola tricolor</i> L. type <i>violacea</i>	13 ¹⁾		CLAUSEN, J., 1927b.
„ <i>elegantula</i> SCHOTT, <i>V. declinata</i> W. et K. spec.			
„ <i>Valderia</i>	10		„ „ 1926.
„ <i>Valderia</i> ²⁾	10		„ „ 1927.
„ <i>Zoysii</i> WOLF.	20		„ „ 1927b.
„ (commercial variety)			
„ („ <i>Florencicum</i> “	24	48	GERSHOY, 1928.
„ (commercial variety)			
„ „ <i>pansy</i> “	24	48	„ „
Section <i>Nominium</i>			
<i>Viola adunca</i>	9	18	„ „
„ <i>affinis</i>	27	54	„ „
„ <i>blanda</i>	24	48	„ „
„ <i>Brittoniana</i>	27	54	„ „
„ <i>canina</i> REHB.	36		CLAUSEN, J., 1926, 1927b.
„ <i>chinensis</i>	24	48	GERSHOY, 1928.
„ <i>conspersa</i>	9	18	„ „
„ <i>cucullata</i> AIT.	26		CLAUSEN, J., 1927b.
„ <i>cucullata</i>	27	54	GERSHOY, 1928.
„ <i>diffusa</i>	26		(MIYAJI, 1913), given by ISHIKAWA, 1916.
„ <i>elatior</i> FRIES.	20		CLAUSEN, J., 1927b.
„ <i>elatior</i>	21	42	GERSHOY, 1928,
„ <i>emarginata</i>	27	54	„ „
„ <i>epipsila</i> LEDEB.	12		CLAUSEN, J., 1926, 1927b.
„ <i>fimbriatula</i>	27	54	GERSHOY, 1928.
„ <i>grypoceras</i> A. GRAY.	10		MIYAJI, 1913, 1927a.
„ <i>hirsutula</i>	27	54	GERSHOY, 1928.
„ <i>hirta</i> L.	10		HEILBORN, 1926; CLAUSEN, J., 1926, 1927b.
„ <i>Howellii</i>	21	42	GERSHOY, 1928.
„ <i>incognita</i>	21	42	„ „
„ <i>japonica</i> LANGSD.	24		MIYAJI, 1913, 1927a.
„ <i>labradorica</i>	9	18	GERSHOY, 1928.
„ <i>lanceolata</i>	12	24	„ „
„ <i>Langloisii</i>	27	54	„ „
„ <i>latiuscula</i>	27	54	„ „
„ <i>Lovelliana</i>	27	54	„ „

¹⁾ Irregularities occurred in the meiotic divisions of this type.

²⁾ CLAUSEN (1927) states that the plant examined was not *V. Valderia* ALL. but corresponded to *V. Valderia* REHB., generally referred to as *V. heterophylla* BERTOL.

VIOLACEAE (continued)	n	2n	
VIOLA (continued)			
Section <i>Nominium</i> (continued)			
<i>Viola mirabilis</i> L.	10		CLAUSEN, J., 1926, 1927b.
„ <i>Missouriensis</i>	27	54	GERSHOY, 1928.
„ <i>neglecta</i> M. BIEB.	20		CLAUSEN, J., 1927b.
„ <i>nephrophylla</i>	27	54	GERSHOY, 1928.
„ <i>nipponica</i> MAXIM.	10		MIYAJI, 1913, 1927a.
„ <i>odorata</i>	7-11	18	GERSHOY, 1928.
„ <i>odorata</i> L.	10		(WINGE, 1921) given by CLAUSEN, J., 1921; HEILBORN, 1926; CLAUSEN, J., 1926, 1927.
„ <i>okubo</i> MAKINO (= <i>V. Keiskei</i> Miq. var.) ¹⁾	12		MIYAJI, 1913, 1927a.
„ <i>okuboiglabra</i> MAKINO	12		MIYAJI, 1913, 1927a.
„ <i>pallens</i>	12	24	GERSHOY, 1928.
„ <i>palmata</i>	27	54	„ „
„ <i>palustris</i>	24	48	„ „
„ <i>palustris</i> L. ²⁾	likely		
	24		CLAUSEN, J., 1927b.
„ <i>papilionacea</i>	27	54	GERSHOY, 1928.
„ <i>Patrini</i> DC.	36(?)		MIYAJI, 1913, 1927a.
„ <i>Patrini</i> var. <i>chinensis</i> (= <i>V. Mandshurica</i> W. BECKER) ¹⁾		48	(MIYAJI, 1913), given by ISHIKAWA, 1916.
„ <i>pedata</i>	27	54	GERSHOY, 1928.
„ <i>pedatifida</i>	27	54	„ „
„ <i>phalacrocarpa</i> MAXIM.	12		MIYAJI, 1913, 1927a.
„ <i>pinnata</i> L.	ca. 24		CLAUSEN, J., 1927b.
„ <i>pinnata</i>	24	48	GERSHOY, 1928.
„ <i>primulifolia</i>	12	24	„ „
„ <i>renifolia</i>	12	24	„ „
„ <i>rostrata</i>	9	18	„ „
„ <i>rotundifolia</i>	6	12	„ „
„ <i>sagittata</i>	27	54	„ „
„ <i>Selkirkii</i>	12	24	„ „
„ <i>septemloba</i>	27	54	„ „
„ <i>septentrionalis</i>	27	54	„ „
„ <i>silvestris</i> REHB.	10		CLAUSEN, J., 1926, 1927b.
„ <i>sylvestris</i>	21	42	GERSHOY, 1928.
„ <i>sororia</i>	27	54	„ „
„ <i>stagnina</i> KIT.	10		CLAUSEN, J., 1926, 1927b.

¹⁾ Synonymy according to CLAUSEN, J., 1927b.²⁾ By calculation from the hybrid *V. epipsila* LEDEB. × *V. palustris* L.

VIOLACEAE (continued)	n	2n	
<i>Viola</i> (continued)			
	probably		
	10		HEILBORN, 1926
<i>Viola striata</i>	9	18	GERSHOY, 1928.
" <i>triloba</i>	27	54	" "
" <i>verecunda</i> A. GRAY . . .	10		MIYAJI, 1913, 1927a.
" <i>villosa</i>	27	54	GERSHOY, 1928.
" <i>athois</i> W. BECKER" . .	12		CLAUSEN, J., 1926.
" <i>calcarata grandiflora</i> " . .	20 & 22 ¹⁾		" " 1927b.
" <i>cornuta hybrida</i> " (<i>V. Williamsii</i> WITTR.)	ca. 24		" " "
" <i>gracilis</i> "	$24 + 4_1$ $\frac{2}{2}$		" " "
" <i>Gustav Wermig</i> "	11		" " "
" <i>lutea grandiflora</i> " . . .	19 & 25 ²⁾		" " "
" <i>splendida</i> "	$16 + 9_1$ $\frac{2}{2}$		" " 1927b
" <i>alpestris</i> × <i>V. tricolor</i> .	$\frac{26_1}{2}$		" " "
" <i>arvensis</i> MURR. type C. × × Line 52 F ₁ (Plant V. 773)	$16, 15 + 4_1$ $\frac{2}{2}$		" " "
" <i>arvensis</i> MURR. type C. × Line 52 F ₂	$14 + 4_1$ $\frac{2}{2}$		" " "
" <i>arvensis</i> MURR. (Line 52) <i>V. tricolor</i> L. ³⁾ F ₁ . . .	$13 + 4_1$ ⁴⁾ , $\frac{2}{2}$ $12 + 6_1$ $\frac{2}{2}$		" " "
" <i>arvensis</i> MURR. (Line 52) × <i>V. tricolor</i> L. F ₁ (sterile types)	14, 17-18, $13 + 2_1$ $\frac{2}{2}$		" " "

¹⁾ In one anaphase plate there were 20 and in another 22 chromosomes.

²⁾ In the homoeotypic telophase, 19 were found at one pole and 25 at the other.

³⁾ Five tricolor types were used: *tricolor typica* (*violacea*) Line 504, 2; *tricolor alba* Line 320, 3; *tricolor lutea* Line 511, 4; *tricolor maritima, rosea*, Line 322 and 5; *tricolor hortensis, velutina* 3, Line 519.

⁴⁾ In heterotypic anaphase the univalents distributed at random to either pole, sometimes a few being left out of the daughter nuclei. At times 1 or 2 univalents split at the heterotypic metaphase.

VIOLACEAE (continued)	n	2n	
<i>Viola</i> (continued)			
<i>Viola arvensis</i> MURR. (Line 52)			
× <i>V. tricolor</i> F ₂ . . .	13-16,		
	13-14 + $\frac{1_1-4_1^1}{2}$		CLAUSEN, J., 1927b.
<i>arvensis</i> MURR. (Line 52)			
× <i>V. tricolor</i> F ₃	13-16		" " "
<i>arvensis</i> MURR. (Line 52)			
× <i>V. tricolor</i> F ₄ . . .	14-16(?)		" " "
<i>cornuta</i> L. × <i>V. elegantula</i> SCHOTT	10-11		" " "
<i>epipsila</i> LEDEB. × <i>V. palustris</i> L.	12 + $\frac{12_1^2}{2}$		" " "
<i>hirta</i> × <i>V. odorata</i> . . .	9-6 + $\frac{1-8_1}{2}$		HEILBORN, 1926.
<i>lutea</i> HUDS. × <i>V. tricolor</i> L.	ca. 24 ²⁾		CLAUSEN, J., 1927b.
<i>odorata</i> × <i>V. hybrida</i> (?)	10		" " "
<i>Riviniana</i> × <i>V. silvestris</i> (spontaneous hybrid) .	20 ³⁾		" " "
<i>tricolor</i> L. type <i>lutea</i> × type <i>violacea</i> F ₁ . . .	13		" " 1926.
<i>tricolor</i> L. type <i>lutea</i> × type <i>maritima rosea</i> F ₁ .	13		" " "
<i>tricolor</i> L. (<i>violacea</i>) × <i>V. arvensis</i> MURR. F ₁ (Plant V 209-3)	17-18, 13 + 2 ₁		" " "
<i>tricolor</i> L. (<i>violacea</i>) × <i>V. arvensis</i> MURR. F ₂ (Plants 336-1, 2, 3) . .	21-25		" " "
<i>tricolor</i> L. (<i>violacea</i>) × <i>V. arvensis</i> MURR. F ₃ (Plants 615-1, 2, 4) . .	21-23		" " "
<i>tricolor</i> L. (<i>violacea</i>) × <i>V. arvensis</i> MURR. F ₄ (Plants 754-1, 3, 4, 6)	20-25		" " "

¹⁾ In the meiotic divisions of F₂, conditions varied from regular to very irregular divisions, from including 1 to many univalents, but 13 bivalents + 1-4 univalents occurred most frequently.

²⁾ The bivalent chromosomes could not be clearly distinguished but 9-11 univalents were visible.

³⁾ The presence of a number of univalents and irregular divisions characterized this hybrid.

PASSIFLORACEAE	n	2n	
<i>Viola</i> (continued)			
<i>Viola tricolor</i> L. (<i>violacea</i>) × <i>V. arvensis</i> MURR. F ₃ . (Plant 616.2 (new type- constant)	14		CLAUSEN, J., 1926.
„ <i>tricolor</i> × <i>V. arvensis</i> off- spring ¹⁾		23	„ „ 1927a.
„ <i>tricolor</i> L. (<i>violacea</i>) × <i>V.</i> <i>arvensis</i> MURR. = <i>Viola</i> <i>hyperchromatica</i> n. sp. .	21-23		„ „ 1926.
<i>Passiflora coerulea</i>		18	HEITZ, 1926.
„ <i>princeps coccinea</i>	9	18	„ „
CARICACEAE			
<i>Carica papaya</i>		18	HEILBRON, 1922.
„ <i>papaya</i> L.	9		MEURMAN, 1925b
„ <i>papaya</i> L.	9	18	SUGIURA, 1927.
DATISCEAE			
<i>Datisca cannabina</i> L.	11 ²⁾		SINOTO, 1928a.
BEGONIACEAE			
BEGONIA ³⁾			
Section <i>Augustia</i> ³⁾			
<i>Begonia Dregei</i>		28-(30)	HEITZ, 1927b.
Section <i>Rostrobegonia</i>			
<i>Begonia Engleri</i>		20-24	„ „
Section <i>Haagea</i>			
<i>Begonia dipetala</i>		ca 28	„ „
Section <i>Platycentrum</i>			
<i>Begonia cateayana</i>		20-24	„ „
„ <i>Henslayana</i>		20-24	„ „
Section <i>Petermannia</i>			
<i>Begonia isoptera</i>		24-28	„ „
Section <i>Scheidweilera</i>			
<i>Begonia luxurians</i>		> 20	„ „
Section <i>Ewaldia</i>			
<i>Begonia rigida</i>		26/28	„ „
„ <i>valida</i>		36/38	„ „
Section <i>Lepsia</i>			
<i>Begonia foliosa</i>		> 50-60	„ „
„ <i>Jamesoniana</i>		34-42	„ „
Section <i>Pritzelia</i>			
<i>Begonia dichotoma</i>		34/36	„ „

¹⁾ The plants examined were the result of crossing normal ♂ plants with self sterile ♀ ones. Cytological conditions showed regularity of division.

²⁾ A pair of unequal chromosomes was distinguishable.

³⁾ This classification under sections is according to ENGLER & PRANTL.

BEGONIACEAE (continued)	n	2n	
<i>Begonia</i> (continued)			
<i>Begonia echinosepala</i>		> 30	HEITZ, 1927b.
" <i>sanguinea</i>		> 30/40	" "
" <i>scandens</i>		(36)/42	" "
" <i>vitifolia</i>		(33)-36	" "
Section <i>Gaertia</i>			
<i>Begonia argyrostigma</i> (= <i>macu-</i>			
<i>lata</i> ?)		> 40	" "
" <i>maculata</i>		30/40	" "
" <i>undulata</i>		> 40	" "
Section <i>Tittelbachia</i>			
<i>Begonia fuchsoides</i>		> 40	" "
Section <i>Huszia</i>			
<i>Begonia Baumannii</i>		24-28	" "
Section <i>Magnusia</i>			
<i>Begonia carolinifolia</i>		28	" "
" <i>conchaefolia</i>		24-28	" "
" <i>crassicaulis</i>		ca. 28	" "
" <i>heradaefolia</i>		28	" "
" <i>imperialis</i>		28/(30)	" "
" <i>incana</i>		30/40	" "
" <i>involucrata</i>		20	" "
" <i>manicata</i>		24-30	" "
" <i>metallica</i>		ca. 28-30	" "
" <i>venosa</i>		ca. 28	" "
Section <i>Donaldia</i>			
<i>Begonia unimifolia</i>		24-28	" "
Section <i>Begoniastrium</i>			
<i>Begonia acerifolia</i>		32-36	" "
" <i>incarnata</i>		> 60/70	
		(towards	
		100)	" "
" <i>Schmidtiana</i>		29-32	" "
Section (?)			
<i>Begonia assamica</i>		(24)-26-	
		(28)	" "
" <i>spec. Java</i>		24-28	" "
" <i>mexicana</i>		27-28	" "

MYRTIFLORAE

PENAEACEAE

Sarcocolla minor 11-12 STEPHENS, 1909.

THYMELAEACEAE

Daphne alpina 9 STRASBURGER, 1909a.
 " *Kiusiana* 9 18 OSAWA, 1913b.

THYMELAEACEAE (continued)		n	2n	
<i>Daphne</i> (continued)				
<i>Daphne Mezereum</i>	9			STRASBURGER, 1909a
„ <i>odora</i>	12-14	28		OSAWA, 1913b.
„ <i>Pseudomeserum</i>	9	18		„ „
<i>Wikstroemia canescens</i>	9			STRASBURGER, 1910a
„ <i>indica</i> (L.) C. A.				
„ <i>MEY</i>	26			WINKLER, 1906.
„ <i>indica</i>	26			STRASBURGER, 1909a.
		20-28		„ 1910d.
<i>Gnidia carinata</i> THBG.	9			„ 1909a.
ELAEAGNACEAE				
<i>Elagnus angustifolia</i>	6	12		SOBOLEWSKA, 1926.
<i>Hippophaë rhamnoides</i>	10	20		„ „
LYTHRACEAE				
<i>Lythrum hyssopifolium</i>	10			TISCHLER, 1928b
„ <i>Salicaria</i>	ca. 24			„ 1917.
		ca. 48		„ 1918a.
	25			„ 1928b.
MELASTOMATACEAE				
<i>Centradenia floribunda</i>		24-26		HEITZ, 1926.
<i>Berthelomia aenea</i>		28-32		„ „
<i>Memecylon floribundum</i> BLUME		24 ¹⁾		RUYS, 1925.
<i>Mouriria anomala</i> PULLE		24 ¹⁾		„ 1924 ²⁾ , 1925.
OENOTHERACEAE				
<i>Epilobium adnatum</i>	18			SCHWEMMLE, 1924a, b.
„ <i>angustifolium</i>	18			MICHAELIS, 1925.
	18 ³⁾			„ 1926.
„ <i>hirsutum</i>	18 ³⁾			HÅKANSSON, 1924a; SCHWEMMLE, 1924a, b; MICHAELIS, 1926, 1928.
	18	36		MICHAELIS, 1925.
„ <i>hirsutum</i> (semi-gigas mutant)	24-30	54		„ 1928.
„ <i>montanum</i>	18			HÅKANSSON, 1924a; SCHWEMMLE, 1924a, b; LEHMANN & SCHWEMMLE, 1927.
„ <i>parviflorum</i>	18			SCHWEMMLE, 1924a, b; LEHMANN & SCHWEMMLE, 1927.

¹⁾ In previous list, GAISER (1926), this number was incorrectly given in the haploid column.

²⁾ RUYS (1924) had counted 12 sets of 3 chromosomes in the endosperm nuclei.

³⁾ With low temperatures irregular pairing and even lack of pairing of the chromosomes was observed in diakinesis and unequal distribution of the chromosomes to the poles in both pollen- and embryo-sac-mother cells.

OENOTHERACEAE (continued)	n	2n	
<i>Epilobium</i> (continued)			
<i>Epilobium roseum</i>	18		SCHWEMMLE, 1924a, b; MICHAELIS, 1925.
„ <i>gigas</i> (<i>E. montanum</i> × <i>E. parviflorum</i>)	18		LEHMANN & SCHWEMMLE, 1927
„ <i>gigas</i> × <i>E. montanum</i> (2472)		36	LEHMANN & SCHWEMMLE, 1927.
„ <i>gigas</i> × <i>E. parviflorum</i> (2471)		36	„ „ „ „
„ <i>hirsutum</i> × <i>E. luteum</i>		54 ¹⁾	MICHAELIS, 1923.
<i>Jussieuia repens</i> L.	3		SINÔTO, 1928b.
<i>Oenothera agari</i>	14 ²⁾		SHEFFIELD, 1927.
„ <i>ammophila</i> FOCKE	14 ²⁾		„ „
„ <i>argillicola</i> MACKENZIE		14	BOEDIJN, 1924a, 1925b.
„ <i>Bauri</i>		14	„ „ „
„ <i>Berteriana</i>	7	14	SCHWEMMLE, 1927.
„ <i>Biennis</i>	7		MACAVOY, 1913; KLEINMAN, 1923.
		14	GATES 1909a; DAVIS, 1910; STOMPS, 1912a, 1916, 1925, 1928; GOLDSCHMIDT, 1913; RENNER, 1914; DE VRIES, 1915a, 1925a; VAN OVEREEM, 1921, 1922; BOEDIJN, 1924a, 1925b.
	14 ⁴⁾		CLELAND, 1923, 1925, 1926a, 1928, (1926) 1929; EMERSON, 1924; VALCANOVER, 1926; KIHARA, 1927a.
„ <i>Biennis albinervis</i>		15	VAN OVEREEM, 1921, 1922.
„ <i>Biennis cana</i>		15	DE VRIES, 1925a.
„ <i>Biennis Chicago</i>		14	BOEDIJN, 1924a, 1925b.
„ <i>Biennis cruciata</i>		14	STOMPS, 1928.

¹⁾ Fifty-two was the highest number of chromosomes actually counted.

NOTE: The foot-notes on *Oenothera* refer to the arrangement of chromosomes (paired or in circles) found in diakinesis. Thus the conditions are briefly indicated along with the investigator's name. All references on *Oenothera* from GAISER (1926) have been included here.

²⁾ Circles variable (SHEFFIELD, 1927).

³⁾ Circle of 12 + 1 pair (SHEFFIELD, 1927).

⁴⁾ Circle of 6 & circle of 8 (CLELAND, 1923, 1926, 1928, (1926) 1929; VALCANOVER, 1926, KIHARA 1927a). EMERSON (1924) states there was no pairing.

OENOTHERACEAE (Continued)	n	2n
<i>Oenothera</i> (continued)		
„ <i>Biennis cruciata</i> gigas		28 STOMPS, 1925.
„ <i>Biennis</i> gigas . . .		28 „ „
„ <i>Biennis</i> gigas nanella.		28 „ „
„ <i>Biennis</i> nanella . .		14 „ 1928.
„ <i>Biennis</i> lata		15 GATES & THOMAS, 1914; DE VRIES, 1915a; 1925a.
„ <i>Biennis</i> latifolia . .		16 VAN OVEREEM, 1921, 1922
„ <i>Biennis</i> liquida . .		15 DE VRIES, 1925a.
„ <i>Biennis</i> militaris . .		15 „ „ „
„ <i>Biennis</i> pallescens. .		15 „ „ „
„ <i>Biennis</i> scintillans .		15 STOMPS, 1928.
„ <i>Biennis</i> semi-gigas .		21 STOMPS, 1912b, 1914, 1925; VAN OVEREEM, 1921, 1922.
		14 STOMPS, 1928.
„ <i>Biennis</i> sulfurea . .	14 ¹⁾ $\frac{2}{2}$	EMERSON, 1924; CLELAND, 1926a, 1928, (1926), 1929.
„ <i>Biennis</i> sulfurea gigas		28 STOMPS, 1928.
„ <i>Cockerelli</i> BARTLETT		14 BOEDIJN, 1924a, 1925b.
	14 ²⁾ $\frac{2}{2}$	OELKERS, 1926.
„ <i>cruciata</i> NUTT (<i>O. stenomeres</i>)		14 STOMPS, 1912a, 1916; BARTLETT, 1915a; BOEDIJN, 1924a, 1925b.
„ <i>stenomeres</i> mut. gigas		28 (ARZBERGER), given by BARTLETT, 1915a, b.
„ <i>disjuncta</i>		14 BOEDIJN, 1924a, 1925b.
„ <i>erionensis</i>	14 ³⁾ $\frac{2}{2}$	SHEFFIELD, 1927.
„ <i>franciscana</i> BARTLETT	14 ⁴⁾ $\frac{2}{2}$	CLELAND, 1922, 1923, 1924, 1925, 1928, (1926), 1929; (CLELAND) given by SHULL 1928.
		14 BOEDIJN, 1924a, 1925b.
„ <i>franciscana</i> sulfurea	14 ⁵⁾ $\frac{2}{2}$	CLELAND, 1923, 1924, 1925, 1928, (1926), 1929.

¹⁾ Circle of 6 & circle of 8 (CLELAND, 1928, (1926) 1929). EMERSON (1924) states there was no pairing.

²⁾ Circle of 12 or 14 (OELKERS, 1926).

³⁾ Circle of 14 (SHEFFIELD, 1927).

⁴⁾ Circle of 14 (CLELAND, 1922); circle of 4 or 5 (CLELAND, 1928, Cleland, given by SHULL, 1928; 3 rings linked to circle of 4 (CLELAND, (1926) 1929); another form, no circles (CLELAND, 1928, (1926) 1929, CLELAND, given by SHULL, 1928).

⁵⁾ One form, circle of 12 + 1 pair (CLELAND, 1924, 1928); another form, 7 pairs (CLELAND, 1928).

OENOTHERACEAE (Continued)	n	2n	
<i>Oenothera</i> (continued)			
<i>Oenothera franciscana sulfurea</i>			
(dwarf)	7 ¹⁾		EMERSON, 1928.
<i>furca</i>		14	BOEDIJN, 1924a, 1925b.
<i>germanica</i>		14	" " "
<i>glauca</i>	14		SCHWEMMLE, 1924b.
<i>grandiflora</i> Ait. . .	7 ²⁾		DAVIS, 1919; CLELAND, 1923, (1926), 1929.
		14	BOEDIJN, 1924a, 1925b.
		15	VAN OVEREEM, 1921.
<i>grandiflora</i> var. <i>gigas</i>	14		DE VRIES, 1918c.
		28	VAN OVEREEM, 1921, 1922; BOEDIJN, 1924c.
<i>grandiflora</i> var. <i>gigas</i>			
<i>nanella</i>		27	VAN OVEREEM, 1921.
<i>grandiflora gigas ochra-</i>			
<i>cea</i>		28	BOEDIJN, 1924c.
<i>grandiflora semi-gigas</i>		21	DE VRIES, 1918c.
<i>Hookeri</i>		14	SCHWEMMLE, 1924b; BOEDIJN, 1924a, 1925b; MICHAELIS, 1928.
	7 ³⁾		SCHWEMMLE, 1924b; CLELAND, 1928.
<i>Lamarckiana</i> . . .	7 ⁴⁾	14	LUTZ, 1907, 1908, 1916; GEERTS, 1907, 1908a, b, 1909; GATES, 1907b, 1908a, b, c, 1909b, 1915a; DAVIS, 1911; GATES & THOMAS, 1914; REN- NER, 1914; STOMPS, 1912, 1916; BOEDIJN, 1920, 1924a, b, 1925a, 1925b; HABER- LANDT, 1921; VAN OVEREEM, 1921, 1922; SINOTO, 1922; DE VRIES & BOEDIJN, 1923, 1924a, 1925a, b; CLELAND, 1923, 1925, 1928, (1926), 1929; HÅKANSSON, 1924b, 1926b; LELIVELD, 1928.

¹⁾ Seven pairs (EMERSON, 1928).²⁾ Seven pairs (DAVIS, 1909, CLELAND, 1928, (1926) 1929).³⁾ Seven pairs (SCHWEMMLE, 1924b; CLELAND, 1928).⁴⁾ Seven pairs (BOEDIJN, 1924b); circle of 12 + 1 pair (CLELAND, 1925, 1928, (1926) 1929; HÅKANSSON, 1926).

OENOTHERACEAE (continued)	n	2n	
<i>Oenothera</i> (continued)			
<i>Oenothera Lamarckiana</i> Mutants			
<i>aberrans</i> (<i>O. lata</i> × <i>O. Lamarckiana</i>)		14 +	fragment LUTZ, 1916.
<i>albida</i>		15	LUTZ, 1908, 1917a; DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925b; DE VRIES & GATES, 1928.
<i>albida gigantea</i>		24	VAN OVEREEM, 1922.
<i>angustifolia</i>	14		DULFER, 1924.
<i>aurata</i>	14 ¹⁾		CLELAND, 1928.
	$\frac{2}{2}$		
<i>auricula</i>		15	DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925b.
<i>aurita</i>		15	DE VRIES & BOEDIJN, 1923, 1924b; BOEDIJN, 1925b.
<i>bienniformis</i>		14	VAN OVEREEM, 1922; BOEDIJN, 1925b.
<i>bipartita</i>		15	LUTZ, 1917a.
<i>blanda gigantea</i>		25	VAN OVEREEM, 1921, 1922.
<i>blandina</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN 1923; DE VRIES & GATES, 1928; CLELAND, 1928, (1926), 1929.
	14 ²⁾		
	$\frac{2}{2}$		
<i>blandina gigantea</i>		24	VAN OVEREEM, 1921, 1922.
<i>brevistylis</i>		14	GATES & THOMAS, 1914; BOEDIJN, 1925b; DE VRIES & GATES, 1928.
<i>cana</i>		15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924a, b; BOEDIJN, 1924b, 1925a, b; DULFER, 1926; DE VRIES & GATES, 1928.
<i>candicans</i>		15	DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925b.
<i>compacta</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN, 1923.

¹⁾ Circles of 4 or 5, or one circle of 12 + 1 pair, or 1 circle of 10 + 2 pairs (CLELAND, 1928).

²⁾ Seven pairs (CLELAND, 1925, 1928, (1926) 1929).

OENOTHERACEAE (continued)		n	2n
<i>Oenothera Lamarckiana</i> Mutants (Continued)			
<i>curta</i>	15		HÅKANSSON, 1926b.
	$\frac{2}{2}$		
<i>decipiens</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN, 1923; DE VRIES & GATES, 1928.
<i>delata</i>		15	DE VRIES & BOEDIJN, 1923, BOEDIJN, 1924b, 1925b.
<i>delicatula</i>		14	LUTZ, 1916.
<i>dentata</i>	15 ¹⁾		HÅKANSSON, 1926b.
	$\frac{2}{2}$		
<i>dependens</i>	15 ²⁾		HÅKANSSON, 1926b.
	$\frac{2}{2}$		
<i>deserens</i>		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b; 1925b; DE VRIES & GATES, 1928.
	7 ³⁾		CLELAND, 1928, (1926) 1929.
<i>diluta</i>		15	BOEDIJN, 1924b, 1925b.
<i>distans</i>		15	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b, 1925b.
<i>elongata</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN, 1923.
<i>erythrina</i>		15	VAN OVEREEM, 1921.
		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b, 1925b; DE VRIES & GATES, 1928.
	14 ⁴⁾		CLELAND 1928, (1926), 1929.
	$\frac{2}{2}$		
<i>excelsa</i>	21 ⁵⁾		HÅKANSSON, 1926b.
	$\frac{2}{2}$		
<i>exilis</i>		15	LUTZ, 1917a.
<i>exundans</i>		15	LUTZ, 1917a.
<i>favilla</i>		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b.
<i>flava</i>		15	DE VRIES & BOEDIJN, 19233; BOEDIJN, 1924b, 1925b.
<i>flavescens</i>	14 ⁶⁾		HÅKANSSON, 1926b.
	$\frac{2}{2}$		

¹⁾ One pair & 1 or more chains (HÅKANSSON, 1926b).

²⁾ One pair & circle of 13 (HÅKANSSON, 1926).

³⁾ Seven pairs (CLELAND, 1925, 1928, (1926) 1929).

⁴⁾ Circle of 6 & 4 pairs (CLELAND, 1928, (1926) 1929).

⁵⁾ A trivalent group was often seen in diakinesis (HÅKANSSON, 1926b).

⁶⁾ Circle of 12 & 1 pair (HÅKANSSON, 1926b).

OENOTHERACEAE (continued) n 2n

Oenothera Lamarckiana Mutants (Continued)

<i>flavicula</i>	14 ¹⁾ 2	RENNER, 1928.
<i>fragilis</i>	14	BOEDIJN, 1920, 1924 <i>b</i> , 1925 <i>b</i> ; DE VRIES & BOEDIJN, 1923.
<i>gigantea</i> (diploid)	14	HÅKANSSON, 1924 <i>b</i> .
	14 ²⁾ 2	„ 1926 <i>b</i> .
„ (tetraploid)	28	„ 1924 <i>b</i> .
	14	„ 1926 <i>b</i> .
<i>gigas</i>	28 ³⁾	LUTZ, 1907, 1908; GATES, 1908 <i>a</i> , <i>b</i> , 1909 <i>c</i> , 1911, 1913 <i>a</i> , <i>b</i> , 1915 <i>a</i> , 1917 <i>b</i> ; GATES & THOMAS, 1914; DAVIS, 1911; DE VRIES, 1918 <i>a</i> ; STOMPS, 1912 <i>a</i> , 1916; VAN OVEREEM, 1921, 1922; BOEDIJN, 1924 <i>b</i> , 1925 <i>b</i> .
<i>gigas lata</i>	29	VAN OVEREEM, 1922; BOEDIJN, 1924 <i>c</i> .
<i>hamata</i>	15	DE VRIES & BOEDIJN, 1924 <i>a</i> ; BOEDIJN, 1924 <i>b</i> , 1925 <i>b</i> .
<i>incurvata</i>	15	GATES, 1915 <i>a</i> .
<i>lactuca</i>	15	VAN OVEREEM, 1921, 1922; DE VRIES, & BOEDIJN, 1923, 1924 <i>b</i> , 1925 <i>b</i> .
<i>laevifolia</i>	14	GATES, 1909 <i>a</i> .
<i>lancifolia</i>	14	DULFER, 1926.
<i>lata</i>	14, 15, 16	LUTZ, 1908.
	15	GATES, 1907 <i>a</i> . 1909 <i>b</i> , 1912; LUTZ, 1912; GATES & THO- MAS, 1914; VAN OVEREEM, 1922; DE VRIES & BOEDIJN, 1923, 1924 <i>a</i> ; BOEDIJN, 1924 <i>b</i> 1925 <i>b</i> ; DE VRIES & GATES. 1928.
	7-8	15 OELKERS, 1927.
<i>lata rubricalyx</i>	15	GATES & THOMAS, 1914.
<i>lutescens</i>	16	GATES, 1915 <i>a</i> , <i>b</i> .
<i>latifrons</i>	14 ⁴⁾	CLELAND, 1928, (1926), 1929.

¹⁾ Circle of 12 & 1 pair (RENNER, 1928).²⁾ Circle of 12 & 1 pair (HÅKANSSON, 1926*b*).³⁾ Lutz, (1908) sometimes found 29 chromosomes.⁴⁾ Lacks circles [CLELAND (1926) 1929].

OENOTHERACEAE (continued) n 2n

Oenothera Lamarckiana Mutants (continued)

<i>linearis</i>	14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b.
<i>liquida</i>	15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924a, b; BOEDIJN, 1924b, 1925b; DULFER, 1926.
<i>militaris</i>	14	DULFER, 1926.
<i>nanella</i>	14	GATES, 1908a; LUTZ, 1908; DE VRIES & BOEDIJN 1923; BOEDIJN, 1925b; DE VRIES & GATES, 1928.
<i>nanella lata</i>	15	LUTZ, 1917a.
<i>nitens</i>	15	DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925b.
<i>oblonga</i>	14	LUTZ, 1908.
<i>oblonga</i>	14 or 15	LUTZ, 1917a. 15 ¹⁾ DE VRIES, 1918a; VAN OVER- EEM, 1922; DE VRIES & BOEDIJN, 1923, 1924a, BOEDIJN, 1924b, 1925a, b; CLELAND, 1923, 1925, 1928, (1926) 1929; DE VRIES & GATES, 1928.
<i>obscura</i>	15 ²⁾	HÅKANSSON, 1926b.
	$\frac{2}{2}$	
<i>pallascens</i>	15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924a, b; BOEDIJN, 1924b, 1925a, b; DE VRIES & GATES, 1928.
<i>pallida</i>	14	BOEDIJN, 1924b, 1925b; DE VRIES & GATES, 1928.
<i>perennis</i>	21	BOEDIJN, 1925b.
<i>persicaria</i>	15	DE VRIES & GATES, 1928.
<i>pervirens</i>	14 ³⁾	(ILLICK) given by SHULL, 1928.
<i>planifolia</i>	7 ⁴⁾	HÅKANSSON, 1926b.
<i>plicatula</i>	14	LUTZ, 1916.

¹⁾ Circles of 3 or chains of 4, 7, & 9 and the others pairs (CLELAND, 1928); variation in the number paired and unpaired (CLELAND (1926) 1929).

²⁾ Often circle of 12 & 1 pair (HÅKANSSON 1926b).

³⁾ Circle of 12 + 1 pair, or 7 pairs (ILLICK, given by SHULL, 1928).

⁴⁾ Circle of 11 + 1 pair (HÅKANSSON, 1926b).

OENOTHERACEAE (continued)	n	2n	
<i>Oenothera Lamarckiana</i> Mutants (continued)			
<i>problandina</i>		14	DE VRIES & BOEDIJN, 1923; 1923; BOEDIJN, 1924b; DE VRIES & GATES, 1928.
„pseudo gigas”		14	STOMPS, 1916
<i>pulla</i>		15	DE VRIES & BOEDIJN, 1924a; BOEDIJN, 1924b, 1925a, b; DULFER, 1926; DE VRIES & GATES, 1928.
<i>quadrata</i>		21	DE VRIES & GATES, 1928.
<i>recurrens</i>		14	BOEDIJN, 1924b, 1925b.
<i>rubricalyx</i>		14 ¹⁾	GATES & THOMAS, 1914; GATES 1915a; DE VRIES & BOEDIJN, 1923; CLELAND, 1925, 1928, (1926)1929; BOEDIJN, 1925b; DE VRIES & GATES; 1928, SHEFFIELD, 1927.
<i>rubricalyx rubicunda</i>		14	BOEDIJN, 1925b.
<i>rubricalyx tenella</i>		15	BOEDIJN, 1925b.
<i>rubrinervis</i>		14	GATES, 1908a, c; DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924b, 1925b; DULFER, 1926; DE VRIES & GATES, 1928.
		14 +	
			fragment LUTZ, 1916a.
	14 ²⁾		CLELAND, 1925, 1928, (1926)
	$\frac{2}{2}$		1929.
<i>rubrisepala</i>	14 ³⁾		HÅKANSSON, 1926b.
	$\frac{2}{2}$		
<i>scindens</i>		14	DE VRIES & BOEDIJN, 1923.
<i>scintillans</i>		15	HANCE, 1918; VAN OVEREEM, 1922; DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925b; DE VRIES & GATES, 1928.
<i>secunda</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN, 1923.
<i>secunda lata</i>		15	„ „
<i>semigigas</i>		21	GEERTS, 1911; STOMPS, 1912a; LUTZ, 1912; GATES, 1915a; VAN OVEREEM, 1922; DE

¹⁾ Circle of 8 + 3 pairs (CLELAND, 1925, 1928 (1926) 1929), circle of 6 + 4 pairs (SHEFFIELD, 1927).

²⁾ Circle of 6 + 4 pairs (CLELAND, 1925, 1928, (1926) 1929).

³⁾ Circle of 6 + 4 pairs (HÅKANSSON, 1926b).

OENOTHERACEAE (continued) n 2n

Oenothera Lamarckiana Mutants (Continued)

			VRIES & BOEDIJN, 1924a, b; BOEDIJN, 1925b; DE VRIES & GATES, 1928.
<i>semi-gigas cana</i>	15		DE VRIES, 1955b.
<i>semi-gigas hamata</i>	15	" "	"
<i>semi-gigas liquida</i>	15	" "	"
<i>semi-gigas pulla</i>	15	" "	"
<i>semi-gigas scintillans</i>	15	" "	"
<i>semi-gigas spathulata</i>	15	" "	"
<i>semilata</i>	15		GATES, 1913b, GATES & THO- MAS, 1914; DE VRIES & BOE- DIJN, 1923; BOEDIJN, 1924b, 1925b.
<i>spathulata</i>	15		DE VRIES & BOEDIJN, 1923, 1924a; BOEDIJN, 1924b, 1925a, b; DE VRIES & GATES, 1928; DULFER, 1926.
<i>stricta</i>	15		HÅKANSSON, 1926b.
<i>sublinearis</i>	15		DE VRIES & BOEDIJN, 1923, BOEDIJN, 1924b.
<i>subovata</i>	15		LUTZ, 1917a; DE VRIES & BOE- DIJN, 1923; BOEDIJN, 1924b.
<i>tarda</i>	14		BOEDIJN, 1920, 1924b, 1925b; DE VRIES & BOEDIJN, 1923; DE VRIES & GATES, 1928.
<i>tardescens</i>	15		BOEDIJN, 1924b.
<i>tripartita</i>	15 3		fragments DULFER, 1926.
<i>vixifolia</i>	15		VAN OVEREEM, 1921.
<i>de Vriesii</i>	15		VAN OVEREEM, 1921, 1922.
<i>mutant sulfurea</i>	14 ¹⁾		CLELAND, (1926) 1929.
	<u>2</u>		
<i>mutant 1926.41.2</i>	6-9	15	MICHAELIS, 1928.
<i>mutant 1926.101.a</i>	7-8		" "
<i>Oenothera Lamarckiana simplex</i>		14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES, 1923a; DE VRIES & BOEDIJN, 1923.
„ <i>Lamarckiana simplex</i>			
<i>albida</i>		15	DE VRIES, 1923.
„ <i>Lamarckiana simplex</i>		14	
<i>compacta</i>			DE VRIES, 1923; BOEDIJN, 1925b.

¹⁾ Circle of 4 (CLELAND (1926) 1929).

OENOTHERACEAE (continued)	n	2n
<i>Oenothera</i> (continued)		
<i>Oenothera Lamarckiana simplex</i>		
<i>deserens</i>	14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ <i>Lamarckiana simplex</i>		
<i>elongata</i>	14	DE VRIES, 1923; BOEDIJN, 1925b.
„ <i>Lamarckiana simplex</i>		
<i>favilla</i>	14	DE VRIES, 1923.
„ <i>Lamarckiana simplex</i>		
<i>fragilis</i>	14	„ „ „
„ <i>Lamarckiana simplex</i>		
<i>linearis</i>	14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ <i>Lamarckiana simplex</i>		
<i>lata</i>	15	BOEDIJN, 1920, 1925b; VAN OVEREEM, 1922; DE VRIES, 1923.
„ <i>Lamarckiana simplex</i>		
<i>nanella</i>	14	BOEDIJN, 1920, 1924b, 1925b; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ <i>Lamarckiana simplex</i>		
<i>nanella duplex</i> = (<i>O.</i> <i>simplex</i> mut. <i>gigas</i>).	28	BOEDIJN, 1920, 1925b; DE VRIES, 1923.
„ <i>Lamarckiana simplex</i>		
<i>secunda lata</i>	15	DE VRIES, 1923.
„ <i>Lamarckiana simplex</i>		
<i>semigigas</i>	21	BOEDIJN, 1920, 1925b; DE VRIES, 1923.
„ <i>longiflora</i>	7	BEER, 1906; BOEDIJN, 1925.
„ <i>Millersi</i>	7	14 STOMPS, 1912a.
„ <i>mollissima</i>	7	SCHWEMMLE, 1927.
„ <i>muricata</i> L.	14	STOMPS, 1912a; RENNER, 1914; BOEDIJN, 1924a, 1925b.
	14 ¹⁾	CLELAND, 1923, 1925, 1926b, 1928, (1926), 1929.
„ <i>novae scotiae</i>	14 ²⁾	SHEFFIELD, 1927.
	$\frac{2}{2}$	

¹⁾ Circle of 14 (CLELAND, 1925, 1928, (1926) 1929).

²⁾ Circle of 14 (SHEFFIELD, 1927).

OENOTHERACEAE (continued)	n	2n	
<i>Oenothera</i> (continued).			
<i>Oenothera nultans</i>	7	14	ISHIKAWA 1918.
„ <i>odorata</i>	7		SCHWEMMLE, 1927.
„ <i>pratincola</i>		14	BARTLETT, 1925b.
„ <i>pratincola</i> var. <i>gigas</i> .		28	(ARZBERGER) given by BARTLETT, 1915b.
„ <i>pratincola</i> mut. <i>nummularia</i>		14	BARTLETT, 1916.
„ <i>pumila</i>	14		VALCANOVER, 1926.
„ <i>pyncocarpa</i>	7	14	ISHIKAWA, 1918.
„ <i>rosea</i>	14 ¹⁾		SCHWEMMLE, 1924b.
	$\frac{2}{2}$		
„ <i>sinuata</i> L.	7	14	SINOTO, 1927.
„ <i>strigosa</i>	14 ²⁾		OELKERS, 1926.
	$\frac{2}{2}$		
„ <i>suaveolens</i> DESF. . .	14 ³⁾		DE VRIES, 1918a, b, OELKERS,
	$\frac{2}{2}$		1923, 1926, CLELAND, 1928.
		14	BOEDIJN, 1924a, 1925b.
„ <i>suaveolens lata</i> . . .		15	DE VRIES, 1918b; VAN OVEREEM, 1922.
„ <i>suaveolens jaculatrix</i> .		15	DE VRIES, 1918b.
„ „heterozygous form”	14 ⁴⁾		CLELAND, (1926) 1929.
	$\frac{2}{2}$		
„ (diverse forms) . . .		14	GREGOIRE, 1912.
<i>Oenothera</i> Hybrids:			
<i>Oenothera aurata</i> × <i>latifrons</i> .	14 ⁵⁾		CLELAND, 1928.
	$\frac{2}{2}$		
„ <i>Berteriana</i> × <i>Odo-rata</i>	14 ⁶⁾		SCHWEMMLE, 1928.
	$\frac{2}{2}$		
„ <i>Berteriana</i> × <i>O. odorata</i> F ₂	14(?)		„ ”
„ <i>biennis</i> × <i>O. Hookeri</i>	14 ⁷⁾	14 ⁸⁾	CLELAND, 1928.
	$\frac{2}{2}$		

¹⁾ Chain of 14 (SCHWEMMLE, 1924b).

²⁾ Circle of 12 or 14 (OELKERS, 1926).

³⁾ Circle of 12 or 14 (OELKERS, 1926); circle of 12 + 1 pair (CLELAND, 1928).

⁴⁾ Circle of 10 or 12 (CLELAND, (1926) 1929).

⁵⁾ Circle of 4 + 5 pairs or circle of 6 + 4 pairs (CLELAND, 1928).

⁶⁾ In the F₂ generation of this cross plants appeared having branches that were tetraploid and by close pollination of flowers on these, seeds were obtained that gave rise to two gigas forms. (SCHWEMMLE, 1928), considers that these two gigas.

⁷⁾ plants have the tetraploid chromosome number.

⁸⁾ Circle of 10 + 2 pairs in „*rubefacta*” plants and circle of 14 in „*albata*” plants (CLELAND, 1928).

OENOTHERACEAE (continued)	n	2n	
<i>Oenothera</i> Hybrids (Continued):			
<i>Oenothera biennis</i> × <i>O. Lamarckiana</i>		14	RENNER, 1914.
„ <i>biennis</i> × <i>O. muricata</i>	14 ¹⁾ $\frac{2}{2}$		RENNER, 1914; CLELAND, 1928 ²⁾
„ <i>biennis</i> × <i>O. suaveolens</i>	14 ²⁾ $\frac{2}{2}$		CLELAND, 1928.
„ <i>biennis semigigas</i> × × <i>O. Lamarckiana</i> .		95	VAN OVEREEM, 1921.
„ <i>biennis semigigas</i> × <i>O. Lamarckiana gigas</i>		23 36	„ „ „ „ „ „
„ <i>franciscana</i> × <i>O. grandiflora</i>	14 ³⁾ $\frac{2}{2}$		CLELAND, 1928.
„ <i>franciscana sulfurea</i> × <i>latifrons</i>	14 ⁴⁾ $\frac{2}{2}$	14	CLELAND, 1928.
„ <i>grandiflora</i> × <i>franciscana</i>	14 ³⁾ $\frac{2}{2}$		„ „
„ <i>grandiflora</i> × <i>mut. sulfurea</i>	14 ⁵⁾ $\frac{2}{2}$		„ „ (1926) 1929.
„ <i>grandiflora</i> var. <i>lorea</i> × <i>O. Lamarckiana</i> .		24	DE VRIES, 1918a.
„ <i>Hookeri</i> × <i>O. suaveolens</i>		14 ³⁾	CLELAND, 1928.
„ <i>Lamarckiana</i> × <i>O. biennis</i>		14	RENNER, 1914.
„ <i>Lamarckiana</i> × <i>O. biennis</i> (= <i>O. lax</i>)	14 ⁶⁾ $\frac{2}{2}$		HÅKANSSON, 1926b.

¹⁾ Circle of 4 + circle of 6 + 2 pairs (CLELAND, 1928).

²⁾ Circle of 12 + 1 pair (CLELAND, 1928).

³⁾ Circle of 4 + 5 pairs (CLELAND, 1928).

⁴⁾ Circle of 6 + 4 pairs (CLELAND, 1928).

⁵⁾ Circle of 6 + 4 pairs or no circle (CLELAND, 1928, (1926) 1929).

⁶⁾ As in *O. Lamarckiana*, circle of 12 + 1 pair (HÅKANSSON, 1926b). In one loculus of an anther was found a small group of pollen-mother-cells which were tetraploid.

OENOTHERACEAE (continued)	n	2n
<i>Oenothera</i> (continued)		
<i>Oenothera Lamarckiana</i> × <i>O.</i>		
<i>atrovirens semigigas</i>		24-28 STOMPS, 1916
<i>Lamarckiana</i> × <i>O.</i>		
<i>cruciata</i>		21 GATES, 1915b,
<i>Lamarckiana</i> × <i>O.</i>		
<i>Millersi</i>		21 " "
<i>Lamarckiana</i> × <i>O.</i>		
<i>muricata</i>		21 " "
<i>Lamarckiana</i> × <i>O.</i>		
<i>syrticola semigigas</i> .		24 STOMPS, 1916b.
<i>Lamarckiana gigas</i> ×		
<i>O. atrovirens</i> SHULL		
& BARTLETT (<i>O. cru-</i>		
<i>ciata</i> NUTT)	21, 28 ¹⁾	STOMPS, 1916.
<i>Lamarckiana gigas</i> ×		
<i>O. Lamarckiana</i> . .	7+7 ₁	GEERTS, 1911.
<i>Lamarckiana gigas</i> ×		
<i>O. Lamarckiana</i> F ₂ .	14	" "
(<i>lata</i> × <i>Lamarckiana</i>		
<i>semi-gigas</i>	21	BOEDIJN, 1925b.
(<i>lata</i> × <i>gigas</i>) . . .	10, 11	" "
(<i>Lamarckiana</i> × <i>O.</i>		
<i>grandiflora gigas</i>) <i>gi-</i>		
<i>gas</i>	28	" 1924c, 1925b.
(<i>Lamarckiana lata</i> ×		
<i>Lamarckiana</i>) <i>semi-</i>		
<i>gigas mutant deute-</i>		
<i>rogigas</i>	28	" "
(<i>lorea</i> × <i>O. Lamarck-</i>		
<i>iana</i>)	28.	" " 1925b.
(<i>simplex</i> × <i>O. Bien-</i>		
<i>nis Chicago</i>) <i>gigas</i> .	28	" " "
<i>mut. sulfurea</i> × <i>O.</i>		
<i>grandiflora</i>	14 ²⁾	CLELAND, 1928.
	$\frac{2}{2}$	
(<i>suaveolens</i> × <i>O. stri-</i>		
<i>gosa</i>) <i>flava</i>	7 ³⁾	OELKERS, 1926.
(<i>suaveolens</i> × <i>O.</i>		
<i>strigosa</i>) <i>albata</i> . .	14 ⁴⁾	" "
	$\frac{2}{2}$	

¹⁾ One plant showed 28 chromosomes.²⁾ Circle of 6 + 4 pairs or no circle (CLELAND, 1928, (1926) 1929).³⁾ In both F₁ and F₂ plants the chromosomes appeared paired in diakinesis.⁴⁾ In both F₁ and F₂ plants the chromosomes appeared as one pair and two chains of the others.

OENOTHERACEAE (continued)	n	2n	
<i>Oenothera</i> (continued)			
<i>Oenothera Lamarckiana biennis</i>			
× <i>O. suaveolens</i>	14 ¹⁾		CLELAND, 1928.
	$\frac{2}{2}$		
„ <i>Berteriana</i> × <i>onagra</i>			
<i>muricata</i>	7		SCHWEMMLE, 1927.
Progeny of <i>Oenothera Lamarckiana semigigas</i> × <i>O. (biennis</i> × <i>Lamarckiana) velutina</i> :			
<i>Oenothera Lamarckiana</i>		14	BOEDIJN, 1925b.
„ <i>Lamarckiana auricula</i>		15, 17	„ „
„ <i>Lamarckiana cana</i>		15, 16, 17, 19, 20	„ „
„ <i>Lamarckiana candicans</i>		16	„ „
„ <i>Lamarckiana dorycarpa</i>		15	„ „
„ <i>Lamarckiana euryphylla</i>		15	„ „
„ <i>Lamarckiana hamata</i>		20	„ „
„ <i>Lamarckiana lata</i>	15, 17	15	„ „
„ <i>Lamarckiana liquida</i>		15, 16	„ „
„ <i>Lamarckiana oblonga</i>		15	„ „
„ <i>Lamarckiana pallescens</i> . ×		15, 16, 17, 19, 20	„ „
„ <i>Lamarckiana pulla</i>		15, 16, 17	
„ <i>Lamarckiana scintillans</i>		15, 16, 17, 18, 19	„ „
„ <i>Lamarckiana spathulata</i>		15, 16, 17, 18	„ „
Progeny of <i>Oenothera Lamarckiana semigigas</i> × <i>O. decipiens</i> .			
<i>Oenothera Lamarckiana</i>		14	BOEDIJN, 1925b.
„ <i>Lamarckiana auricula</i>		15	„ „
„ <i>Lamarckiana cana</i>		15, 16, 17, 18, 19	„ „
„ <i>Lamarckiana Ligula</i>		15, 19, 20, 21	„ „
„ <i>Lamarckiana liquida</i>		15, 16, 20	„ „

¹⁾ Circle of 12 + 1 pair (CLELAND, 1928).

OENOTHERACEAE (continued)

n

2n

Progeny of *Oenothera Lamarckiana semigigas* × *O. decipiens*
(continued)

Oenothera Lamarckiana oblonga

15 BOEDIJN, 1925b

" *Lamarckiana pallescens*

15, 16 " "

" *Lamarckiana pulla*

15, 19 " "

" *Lamarckiana scintillans*

15, 18, 19 " "

" *Lamarckiana spathulata*

15, 16, 17, 18, 19 " "

Progeny of *Oenothera Lamarckiana* × (*O. biennis* × *Lamarckiana*) *velutina cana* (2n = 16):

cana

15 BOEDIJN, 1925b.

cana nanella

15 " "

Lamarckiana

14 " "

liquida

15 " "

liquida nanella

15 " "

oblonga

15 " "

pulla

15 " "

spathulata

15 " "

Progeny of *Oenothera L. semigigas* × (*O. biennis* × *Lamarckiana*) *velutina pulla* (2n = 17):

cana

15 BOEDIJN, 1925b.

Lamarckiana

14 " "

liquida

15 " "

oblonga

15 " "

pallescens

15 " "

pulla

Progeny of *Oenothera L. semigigas* (*O. biennis* × *Lamarckiana*) *velutina euryphylla* (2n = 20):

Plants with 17, 19, 23, 24, 26, 27 chromosomes . . .

BOEDIJN, 1925b.

Progeny of *Oenothera L. semigigas* × (*biennis* × *Lamarckiana*) *velutina pallescens* (2n = 20):

Blandina

15 BOEDIJN, 1925b.

Blandina (abnormal)

15 " "

Pallescens

15 " "

OENOTHERACEAE (continued)

Progeny of *Oenothera* *L. semigigas* × (biennis × *Lamarckiana*) *velutina* *alata* ($2n = 26$):

Plants with 26, 27, 28 chromosomes.

BOEDIJN, 1925b.

Progeny of *Oenothera* *Lamarckiana semigigas* × *O. (muricata* × *Lamarckiana)* *velutina*:

Central Group:

<i>Oenothera Euryphylla</i>	20	DULFER, 1926.
„ <i>glabra</i>	16	„ „
„ <i>Lamarckiana</i>	14	„ „
„ <i>pulla</i>	15	„ „
„ „Nebenformen”	16	„ „

Lata Group:

<i>Latifolia</i>	16	DULFER, 1926.
<i>Synedra</i>	16	„ „
(„weitere Nebenformen”)	16, 17	„ „

Scintillans Group:

<i>Oenothera acuminata</i>	17, 18	DULFER, 1926.
„ <i>hastata</i>	16, 17	„ „
„ <i>lamprophylla</i>	17	„ „
„ <i>lancifolia</i>	17	„ „
„ <i>linearis</i>	15, 16, 18,	
	20	„ „
„ <i>militaris</i>	16, 17	„ 1926
„ („weitere Nebenformen”)	17, 19	„ „

Cana Group:

<i>Oenothera angustifolia</i>	17, 18	DULFER, 1926.
„ <i>cana</i>	15	„ „
„ <i>cana</i> B	16	„ „
„ <i>depilis</i>	16	„ „
„ <i>opaca</i>	15	„ „
„ („weitere Nebenformen”)	13, 17	„ „

Liquida Group:

<i>Oenothera cucumis</i>	15	„ „
„ <i>lingua</i>	16	„ „
„ <i>plana</i>	15	„ „
<i>Oenothera</i> („weitere Nebenformen”)	16	DULFER, 1926.

Spatulata Group:

<i>Oenothera chlorina</i>	17	„
-------------------------------------	----	---

OENOTHERACEAE (continued)	n	2n	
Progeny of <i>Oenothera Lamarckiana</i> <i>semigigas</i> × <i>O. (muricata)</i> × <i>Lamarckiana</i> <i>velutina</i> (continued):			
<i>Oenothera cochleata</i>		16	DULFER, 1926.
" <i>dentata</i>		16	" "
" <i>hamata</i>		15	" "
" <i>orbicularis</i>	16, 17, 18	"	"
" <i>rotunda</i>	16, 17, 18	"	"
" <i>spathulata</i>	15, 16	"	"
" <i>spathulata</i> B	16, 17	"	"
" <i>spathulata</i> Y	17, 18, 19	"	"
" <i>spathulata</i> B	17, 16	"	"
" („weitere Nebenformen")	17, 18	"	"
<i>Pallescens</i> Group:			
<i>Oenothera pallescens</i>		15	" "
" („Nebenform")		18	DULFER, 1926.
Individuals which did not bloom (from same series):			
<i>Oenothera glabra</i>		16	DULFER, 1926.
" <i>latifolia</i>		16	" "
" „(andere Nebenformen)"		17	" "
" <i>acuminata</i>	17, 18	"	"
" <i>Hastata</i>	17	"	"
" <i>lamprophylla</i>	17	"	"
" <i>lancifolia</i>	17	"	"
" <i>linearis</i>	15, 18, 20	"	"
" („andere Nebenformen")		19	" "
" <i>depilis</i>		16	" "
" <i>orbicularis</i>	17, 18	"	"
" <i>rotunda</i>	16, 17, 18	"	"
<i>Eucharidium concinnum</i>	7 ¹⁾		SCHWEMMLE, 1926.
<i>Godetia amoena</i>	7		HÅKANSSON, 1925; CHITTENDEN, 1928.
" <i>Bottae</i>	9		HÅKANSSON, 1925; CHITTENDEN, 1928.
(<i>Godetia lepidota</i>	21		HÅKANSSON, 1925.
"	26		CHITTENDEN, 1928.
" <i>tenella</i>	16		"

¹⁾ In diakinesis the chromosomes appear in ring pairs.

OENOTHERACEAE (continued)		n	2n	
<i>Godetia</i> (continued)				
<i>Godetia Whitneyi</i>		7		WINGE, 1925; HÅKANSSON, 1925; CHITTENDEN, 1928.
„ <i>amoena</i> × <i>G. Whitneyi</i>				
F ₁			14	HÅKANSSON, 1925.
			14-16	CHITTENDEN, 1928.
„ <i>amoena</i> × <i>G. Whitneyi</i>				
F ₂			14-17	„ „
„ <i>Bottae</i> × <i>G. tenella</i>) ×				
<i>G. tenella</i>) × <i>G. tenella</i>			30	„ „
„ <i>Bottae</i> × <i>G. tenella</i>) ×				
<i>G. Bottae</i>			24-28	„ „
HALORRHAGACEAE				
<i>Gunnera chilensis</i>	ca. 12			MODILEWSKI, 1908; WINGE, 1917.
„ <i>macrophylla</i> Bl.	ca. 12			SAMUELS, 1912.
HIPPURIDACEAE				
<i>Hippuris vulgaris</i>	ca. 16			JUEL, 1911.
	16			WINGE, 1927.
CYNOMORIACEAE				
<i>Cynomorium coccineum</i>	12			JUEL, 1903b.
UMBELLIFLORAE				
ARALIACEAE				
<i>Hedera helix conglomerata</i>	43-47			OEHM, 1924 ¹⁾ .
„ <i>helix typica</i>	44-49			„ „
„ <i>helix hibernica</i>	89-98			„ „
UMBELLIFERAE				
<i>Anthriscus silvestris</i> (L.)				
HOFFM.	7-8			PETERSEN, 1914.
„ <i>silvester</i> .	8			WINGE, 1917.
<i>Aegopodium podagraria</i>	ca. 20			„ „
<i>Pastinaca sativa</i> L.	probably			
	3			BEGHTEL, 1925.
CORNACEAE				
<i>Cornus candidissima</i>	8-9			WINGE, 1917.
„ <i>glabrata</i>	11-12			„ „
<i>Aucuba japonica</i> .	47			(SAKAMURA, 1916) given by ISHIKAWA, 1916.
	18 ²⁾		36 ³⁾	PALM & RUTGERS, 1917.
<i>Aucuba japonica</i> THUNB.	16			SUGIURA, 1927.

¹⁾ In previous list GAISER (1926) this was erroneously given 1923.

²⁾ Seventeen chromosomes were found in one case.

³⁾ In one division figure in the endosperm 48 chromosomes could be clearly counted.

	n	2n
DIAPENSIALES		
DIAPENSIACEAE		
<i>Diapensia lapponica</i>	6 ¹⁾	SAMUELSON, 1913.
„ <i>lapponica</i> L.	6	HAGERUP, 1918.
ERICALES		
CLETHRACEAE		
<i>Clethra alnifolia</i> L.	16	HAGERUP, 1928.
„ <i>arborea</i> AIT.	8	„ „
PYROLACEAE		
<i>Pyrola chlorantha</i>	16	SAMUELSON, 1913.
„ <i>grandiflora</i> (RADDI)	23	HAGERUP, 1928.
„ <i>media</i> probably	16+	SAMUELSON, 1913.
„ <i>minor</i> L.	23	HAGERUP, 1928.
„ <i>rotundifolia</i>	16	SAMUELSON, 1913.
„ <i>rotundifolia</i> L.	23	HAGERUP, 1928.
„ <i>uniflora</i>	16	SAMUELSON, 1913.
ERICACEAE		
<i>Ledum groenlandicum</i> OED.	13	HAGERUP, 1928
<i>Rhododendron lapponicum</i>		
WAHLBG.	13	„ „
<i>Leiophyllum buxifolium</i> ELL.	12	„ „
<i>Loiseleuria procumbens</i> (L.)		
DESVAUX.	12	„ „
<i>Kalmia glauca</i> AIT.	24	„ „
„ <i>latifolia</i> L.	12	„ „
<i>Phyllodoce coerulea</i> (L.) GREN		
& GODR.	6	„ „
<i>Cassiope hypnoides</i> L.	24(?)	„ „
<i>Andromeda polifolia</i> L.	24	„ „
<i>Gaultheria shallon</i> PURSH.	48	„ „
<i>Arbutus andrachne</i> L.	13	„ „
„ <i>canariensis</i> DUHAM.	13	„ „
<i>Arctostaphylos diversifolia</i>		
PARRY	13	„ „
<i>Arctostaphylos uva-ursi</i> (L.)		
SPR.	26	„ „
<i>Gaylussacia baccata</i>	12	LONGLEY, 1927c.
<i>Oxycoccus palustris</i> PERS.	36	HAGERUP, 1928.
<i>Vaccinium angustifolium</i> ²⁾	24	LONGLEY, 1927c.
„ <i>atrococcum</i>	12	„ „

¹⁾ The nuclei of the endosperm contained 18 chromosomes.

²⁾ Plants from two different localities were studied.

ERICACEAE (continued)	n	2n	
<i>Vaccinium</i> (continued)			
<i>Vaccinium canadense</i>	12		LONGLEY, 1927c.
„ <i>canadense</i> (albino)	12		„ „
„ <i>corymbosum</i> ¹⁾	24		„ „
„ <i>hirsutum</i>	24		„ „
„ <i>pallidum</i>	36		„ „
„ <i>vacillans</i>	12		„ „
„ <i>vacillans</i> (albino)	12		„ „
„ <i>virgatum</i>	36		„ „
„ <i>vitis-idaea</i> L.	12		HAGERUP, 1923.
„ <i>angustifolium</i> × <i>V.</i> <i>hirsutum</i>	24		LONGLEY, 1927c.
„ <i>angustifolium</i> × <i>V.</i> <i>myrsinites</i>	24		„ „
(„ <i>angustifolium</i> × <i>V.</i> <i>myrsinites</i>) × <i>V.</i> <i>corymbosum</i>	24.		„ „
„ <i>corymbosum</i> × <i>V.</i> <i>corymbosum</i> (an- ther form).	24		„ „
„ <i>corymbosum</i> × <i>V.</i> <i>virgatum</i>	30 ²⁾		„ „
<i>Calluna vulgaris</i> SALISB. var. <i>pubescens</i> KOCH.	8		HAGERUP, 1923.
<i>Erica arborea</i> L.	12		„ „
„ <i>carnea</i> L.	12		„ „
„ <i>cinerea</i> L.	12		„ „
„ <i>hiemalis</i> hort. angl.	12		„ „
„ <i>tetralix</i> L.	12		„ „
<i>Polycodium stamineum</i>	12		LONGLEY, 1927c.
<i>Bruckenthalia spiculiflora</i> RCHB.	18		HAGERUP, 1923.
EPACRIDACEAE			
<i>Epacris impressa</i>	13		SAMUELSON, 1913.
PRIMULALES			
MYRSINACEAE			
<i>Ardisia crispa</i>	23		DAHLGREN, 1916.
<i>Primula</i> (diverse forms)		18	GRÉGOIRE, 1912.
„ <i>acaulis</i>		22	CHITTENDEN, 1923.
„ <i>auricula</i>	27		MARCHAL, 1920; VOKOLEK, 1925.

¹⁾ Plants from three different localities were studied.

²⁾ Reduction divisions were very irregular and only occasionally were the chromosomes paired.

PRIMULACEAE (continued)	n	2n	
<i>Primula</i> (continued)			
<i>Primula auricula</i> L.	30-36	72	ERNST & MOSER, 1925; MOSER, 1926.
„ <i>floribunda</i>	9		DIGBY, 1912; DAHLGREN, 1916
„ <i>hirsuta</i>	27	54	VOKOLEK, 1925.
„ <i>hirsuta</i> ALL.	30-36	72	ERNST & MOSER, 1925.
	33-36	72	MOSER, 1926.
„ <i>japonica</i>	22		INUMA, 1926.
„ <i>Juliae</i>		22	CHITTENDEN, 1928.
„ <i>Kewensis</i> (<i>P. floribunda</i> × <i>verticillata</i>) (sterile)	9	18	DIGBY, 1912.
„ <i>Kewensis</i> (fertile)	18	36	DIGBY, 1912; DAHLGREN, 1916; PELLEW & DURHAM, 1915.
		36	HEITZ, 1926.
„ <i>Kewensis</i> (farinosa)	18	36	DIGBY, 1912.
„ <i>malacoides</i>	9		SUGIURA, 1928a.
„ <i>modesta</i> var. <i>Fauriae</i>	9		INUMA, 1926.
„ <i>nipponica</i>		22	„ „
„ <i>officinalis</i>	11		MARCHAL, 1920.
	11	22	DAHLGREN, 1916.
„ <i>Reinii</i>		24	INUMA, 1916.
„ <i>Sieboldii</i>	12		„ „
		24	ONO, 1927a.
„ <i>Sieboldii</i> var. <i>Awobanofue</i>		24	INUMA, 1926.
„ <i>Sieboldii</i> var. <i>Edasango</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Hahanoi</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Hatsuhinode</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Hiryu</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Kokiden</i>			
„ <i>Sieboldii</i> var. <i>Kurozomegawa</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Makinowo</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Mitano-hikari</i>		24	„ „
„ <i>Sieboldii</i> var. <i>Nuresagi</i>		36	„ „
„ <i>Sieboldii</i> var. <i>Sasononami</i>		36	INUMA, 1926.
	12 ₃ ¹⁾		ONO, 1927a.

¹⁾ In diakinesis of pollen-mother-cells 12 trivalents occurred.

PRIMULACEAE (continued)

Primula (continued)*Primula Sieboldii* var. *Shiro-**washi*

36 IINUMA, 1926

„ *Sieboldii* var. *Suibijin*

24 „ „

„ *Sieboldii* var. *Uchiu* .

24 „ „

„ *sinensis*

12

24 GRÉGORY, 1909; KEEBLE,
1912; DE WINTON, 1928.

12 & 24

„ *sinensis* (*gigas*) . . .

12

24 VOKOLEK, 1925.

24 GRÉGORY, 1909; KEEBLE, 1912.

24

48 GRÉGORY, 1914.

„ *verticillata*

9

DIGBY, 1912.

„ *acaulis* × *P. Juliae* .

11

22 CHITTENDEN, 1928

„ *auricula* × *P. hirsuta*(= *P. pubescens*) . .

27

VOKOLEK, 1925.

„ *auricula* × *P. hirsuta*ALL. (= *P. pubescens*

JACQ.)

32-36

MOSER, 1926; ERNST & MOSER,
1928.„ *elatior* × *P. Juliae* .

11

22 CHITTENDEN, 1928.

„ *floribunda isabellina*× *P. Kewensis* (sterile)

9

18 DIGBY, 1912.

„ *floribunda isabellina*× *P. Kewensis* (fertile)

9

18

„ „

„ *hirsuta* × *P. auricula*

36-36

72 ERNST & MOSER, 1925.

„ *officinalis* × *P. acau-**lis*

22

CHITTENDEN, 1928.

„ *polyanthus* Cloth ofGold × *P. Juliae* .

11

„ „

Androsace septentrionalis . . .

10

DAHLGREN, 1916.

Cyclamen africanum

32-36

HEITZ, 1926.

„ *cilicicum*

ca. 28-32

„ „

„ *corum*

14

„ „

„ *europaeum*

(28)-32

„ „

„ *graecum*

68-78

HEITZ, 1926

„ *persicum*

48

„ „

„ *persicum* cult. hort.(*gigas*)

42-44

ca. 88

„ „

„ *pseudograecum* . . .

28

„ „

Lysimachia thyrsoiflora

ca. 20

DAHLGREN, 1916.

PLUMBAGINALES

PLUMBAGINACEAE

Plumbago capensis

14

DAHLGREN, 1916.

EBENALES	n	2n	
EBENACEAE			
<i>Diospyros Kaki</i> ¹⁾	(27)-28		YASUI, 1915.
<i>Diospyros Kaki</i> var. <i>E. Goshō</i>	45		NAMIKAWA and HIGASHI, 1928.
var. <i>Kurokama</i>	45		" " " "
var. <i>Nara-</i>			
<i>Goshō</i>	45		" " " "
var. <i>Shōgatsu</i>	45		" " " "
var. <i>Tenji</i> ²⁾	45		" " " "
Seedlings of			
<i>Anzai</i>		90	" " " "
Seedlings of			
<i>Kubo</i>	45	90	" " " "
Seedlings of			
<i>Tenjin-Goshō</i>		90	" " " "
" <i>Lotus</i>	15	30	" " " "
" <i>virginiana</i>	at least		" " " "
	30		HAGUE, 1911.
CONTORTAE			
OLEACEAE			
<i>Syringa chinensis</i> WILLD.	14-20		TISCHLER, 1908.
" <i>chinensis</i> (= <i>rothomagensis</i>)	ca. 16		" 1921-22.
" <i>vulgaris</i>	22		" 1928b.
GENTIANACEAE			
<i>Cotylanthra tenuis</i>	16-18	32-36 ³⁾	OEHLE, 1927.
<i>Gentiana lutea</i>	21		STOLT, 1921.
" <i>procera</i>		ca. 80	DENNISTON, 1913.
<i>Voyria coerulea</i>	18-20		OEHLE, 1927.
<i>Voyriella parviflora</i>	10-14		" "
<i>Leiphaimos azurea</i>	18		WINGE, 1925.
" spec.	16-20		OEHLE, 1927.
APOCYNACEAE			
<i>Vinca herbacea</i>	23		FINN, 1928.
" <i>minor</i>	23		" 1928.
ASCLEPIADACEAE			
<i>Asclepias Sullivantii</i> ENGELM.	ca. 5		FRYE, 1902.
" <i>tuberosa</i>	ca. 5		" 1901.
" <i>verticillata</i> L.	ca. 8		" 1902.

¹⁾ Five different varieties including „Tenryubo“, „Jenjimar“, „Tanenashi“ and „Fuyu“ were studied.

²⁾ Mr. SASAKA of Imp. Hort. Exp. Sta., Okitsu, had counted about 45 pairs of gemini also.

³⁾ This diploid number was determined from divisions in the embryo-sac mother cell and later divisions in embryo-sac.

TUBIFLORAE		n	2n	
CONVOLVULACEAE				
<i>Convolvulus elongatus</i>			22	HEITZ, 1926.
„ <i>scammonia</i>			24(?)	„ „
„ <i>siculus</i>			44	HEITZ, 1926.
„ <i>tricolor</i>			20	„ „
„ <i>undulatus</i>			22-(24)	„ „
<i>Ipomaea purga</i>			(24)-23	„ „
<i>Pharbitis Nil</i>	12-14	24-28		(OGHA, 1916) given by ISHI KAWA, 1916.
„ <i>Nil</i> , CHOIS ¹⁾	15			YASUI, 1928.
„ <i>Nil</i> CHOIS		30		NAGAO, 1928.
POLEMONIACEAE				
<i>Cobaea scandens</i> CAV.	ca 12			LAWSON, 1898
<i>Phlox Drummondii</i>		14		KELLY, 1920.
<i>Gilia millefoliata</i> FISCH et MEY	16			SCHNARF, 1921.
HYDROPHYLLACEAE				
<i>Hydrophyllum canadense</i>	9			(WINKLER, 1921) given by TISCHLER, 1921-22.
	12			SVENSSON, 1925.
<i>Nemophila atomaria</i>	9			CHITTENDEN, 1928.
„ <i>aurita</i>	12			SVENSSON, 1925.
	9			CHITTENDEN, 1928.
„ <i>discoidalis</i>	9			SUGIURA, 1928a.
„ <i>insignis</i>	9			CHITTENDEN, 1928; SUGIURA, 1928.
„ <i>integrifolia</i>	9			CHITTENDEN, 1928.
„ <i>liniflora</i>	9			„ „
„ <i>maculata</i>	9			CHITTENDEN, 1928; SUGIURA, 1928.
<i>Phacelia campanularia</i>	11			CHITTENDEN, 1928.
„ <i>congesta</i>	9			SUGIURA, 1928a.
„ <i>Parryi</i>	11			CHITTENDEN, 1928.
„ <i>Parryi</i> (giant)	11			„ „
„ <i>tanacetifolia</i> BENTH.	9			TJEBBES, 1928.
„ <i>viscida</i>	11			CHITTENDEN, 1928.
„ <i>Whitlavia</i> (alba)	11			„ „
„ <i>Whitlavia</i> (bicolor)	11			„ „
BORRAGINACEAE				
<i>Myosotis micrantha</i>	18-20			WINGE, 1917.
„ <i>versicolor</i>	30			„ „

¹⁾ Diagnostic characters in 11 different strains were noted, and though differing, all had 15 haploid chromosomes.

VERBENACEAE	n	2n	
<i>Verbena angustifolia</i> MICHX.	4		KANDA, 1920.
„ <i>hastata</i> L.	6		„ „
„ <i>officinalis</i>	6		SCHNARF, 1923.
„ <i>stricta</i> VENT.	6		KANDA, 1920.
Intermediate form of <i>V. hastata</i> & <i>V. stricta</i>	6		„ „
LABIATAE			
<i>Lamium album</i>	8		MARCHAL, 1920.
„ <i>album</i> L.	9	18	HEITZ, 1926.
„ <i>amplexicaule</i>	9		JÖRGENSEN, 1927b.
„ <i>amplexicaule</i> L.	9		„ 1923.
„ <i>dissectum</i>	18		„ 1927b.
„ <i>dissectum</i> WITH.	18		„ 1923.
„ <i>Galeobdolon</i> (L.) CRIZ.	18		„ 1927b.
„ <i>intermedium</i> FR.	18		„ „
„ <i>longiflorum</i> TEN.	9		„ „
„ <i>maculatum</i> L.	9		„ „
„ <i>orvala</i> L.	9		„ „
„ <i>purpureum</i>		18	HEITZ, 1926.
„ <i>purpureum</i> L.	9		JÖRGENSEN, 1927b.
„ <i>rugosum</i> AIT.	9		„ „
„ <i>dissectum</i> × <i>amplexicaule</i>	$9 + 9\frac{1}{2}$		„ 1923.
„ <i>dissectum</i> WITH. × <i>amplexicaule</i> L.	$9 + 9\frac{1}{2}$ ¹⁾		„ 1927b.
GALEOPSIS			
Subgenus <i>Ladanum</i> REICHB.			
<i>Galeopsis angustifolia</i> GAUDIN.	8		MÜNTZING, 1928.
„ <i>Ladanum</i> L.	8	16	„ „
„ <i>ochroleuca</i> LAMARCK	8	16	„ „
„ <i>pyrenaica</i> BARTHL.		16	„ „
Subgenus <i>Tetrahit</i> REICHB.			
<i>Galeopsis bifida</i> BOENN.	16	32	„ „
„ <i>pubescens</i> BESS.	8		„ „
„ <i>speciosa</i> MILL.	8	16	„ „
„ <i>Tetrahit</i> L.	16	32	„ „
<i>Thymus serpyllum</i>		ca. 20	
		> 40 ²⁾	NĚMEC, 1925.

¹⁾ Reduction division follows the *Drosera* scheme.

²⁾ Didiploid tetradiploid cells were also found in cells of galls formed by *Eriophyes Thomasii*.

LABIATAE (continued)	n	2n	
<i>Mentha piperita</i> „Eisenstaed- tiana”	18 ¹⁾		SCHÜRHOFF, 1927.
„ <i>piperita</i>	18		HIMMELBAUR & HINDES, 1928.
„ <i>silvestris</i> L.	9		SCHÜRHOFF, 1927.
„ <i>spicata</i> var. <i>lampreille-</i> <i>ma</i> BRIQ. (= <i>M. vi-</i> <i>dis</i> L.)	18 ²⁾		„ „
„ <i>spicata</i> var. <i>lampreille-</i> <i>ma</i> BRIQ.	18		HIMMELBAUER & HINDES, 1928.
<i>Coleus Rehneltianus</i>		12-16	HABERLANDT, 1919.
SOLANACEAE			
<i>Nicandra physaloides</i> GAERTN.	10		DE VILMORIN & SIMONET, 1928.
<i>Salpichoa rhomboidea</i> NIERSEN . .	12		DE VILMORIN & SIMONET, 1927a 1928.
<i>Atropa Belladonna</i>	36		MARCHAL, 1920.
„ <i>Belladonna</i> L.	36		DE VILMORIN & SIMONET, 1927a 1928.
<i>Scopolia lurida</i> DUN.	24		DE VILMORIN & SIMONET, 1928.
<i>Hyoscyamus albus</i>	ca. 18	> 35	BONNET, 1911.
„ <i>alba</i> L.	17		DE VILMORIN & SIMONET, 1928.
„ <i>canadensis</i> HORT.	36		„ „ „ „ 1927a.
„	34		„ „ „ „ 1928.
„ <i>niger</i>		32-36	HEITZ, 1926.
„ <i>niger</i> L.	18		SVENSSON, 1926.
„	17		DE VILMORIN & SIMONET, 1928.
<i>Physalis Alkekengi</i> L.	12		„ „ „ „ 1927a. 1928.
„ <i>Francheti</i> MAST.	12		DE VILMORIN & SIMONET, 1928.
„ <i>peruviana</i> MILL.	24		„ „ „ „ 1927a.
„ <i>peruviana</i> L.	24		„ „ „ „ 1928.
„ <i>philadelphica</i> LAM.	12		„ „ „ „ 1928.
„ <i>pubescens</i> L.	12		„ „ „ „ 1927a. 1928.
<i>Capsicum annuum</i> L. var. <i>Hort.</i>	12		DE VILMORIN & SIMONET, 1927a
„ <i>annuum</i> L.	12		„ „ „ „ 1928.
„ <i>annuum chilense</i>	6 ³⁾		KOSTOFF, D. 1926.
„ <i>annuum grossum</i>	6 ³⁾		„ „

¹⁾ Division was somewhat irregular, lagging chromosomes having been left in the cytoplasm.

²⁾ Dr. HEITZ had informed the writer (SCHÜRHOFF, 1927) that $n = 17-19$. Dwarf pollen grains were also observed.

³⁾ In all species studied, but especially so in *C. annuum chilense* one pair of chromosomes (K_1 & K_2) was considerably larger than the others and were usually on the periphery of the equatorial plate.

SOLANACEAE (continued)	n	2n	
<i>Capsicum</i> (continued)			
<i>Capsicum annuum microcarpum</i>	6 ¹⁾		KOSTOFF, D. 1926.
" <i>annuum nigrum</i> . .	6 ¹⁾		" "
<i>Solanum aethiopicum</i> L. . . .	12		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1928.
" <i>alatatum</i> MOENCH. . .	24		JÖRGENSEN, 1928.
" <i>atropurpureum</i>			
SCHRANK	24		" "
" <i>auriculatum</i> AIT. . .	12		DE VILMORIN & SIMONET, 1928.
" <i>Balbisi</i> DUN. . . .	12		JÖRGENSEN, 1928.
" <i>Caldasii</i> HUMB. et			
BONYL.	12		DE VILMORIN & SIMONET, 1927a
" <i>capsicastrum</i> LINK. .	12		1928.
" <i>chacoense</i> BITTER . .	12		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1928.
" <i>cornutum</i> LAM. . . .	12		SMITH, H. B. 1927.
" <i>cornutum</i> HORT. . .	12		JÖRGENSEN, 1928.
" <i>crispum</i> BENT. . . .	12		DE VILMORIN & SIMONET, 1928.
" <i>demissum</i> LINDL. . .	36		JÖRGENSEN, 1928.
" <i>diphyllum</i> BANKS. . .	36		SMITH, H. B. 1927; JÖRGENSEN
" <i>dulcamara</i> L.	36		1928; DE VILMORIN & SIMONET, 1928.
" <i>fastigiatum</i> WILLD. .	36		JÖRGENSEN, 1928.
" <i>Fendleri</i> GRAY . . .	24		SMITH, H. B. 1927.
" <i>Fontanesianum</i> DUN.	12		DE VILMORIN & SIMONET, 1927a
" <i>Gilo</i> RADDI	12		1928.
" <i>glaucum</i> DUN	12		JÖRGENSEN, 1928
" <i>globiferum</i> DUN. . .	12		DE VILMORIN & SIMONET, 1927a
" <i>gracile</i> OTTO	12		1928.
" <i>gracile</i> LINK	12		JÖRGENSEN, 1928.
" <i>grossularia</i> BITTER .	12		DE VILMORIN & SIMONET, 1927a
" <i>guineuse</i> LAM. . . .	36		JÖRGENSEN, 1928.
" <i>haematocarpum</i> HORT	12		JÖRGENSEN & CRANE, 1927;
" <i>heterodoxum</i> DUN...	12		JÖRGENSEN, 1928.
			JÖRGENSEN 1928.
			JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1927a, 1928.

¹⁾ In all species studied, but especially so in *C. annuum chilense* one pair of chromosomes (K_1 & K_2) was considerably larger than the others and were usually on the periphery of the equatorial plate.

SOLANACEAE (continued)	n	2n	
<i>Solanum</i> (continued)			
<i>Solanum humile</i> BERNH. . . .	36		JÖRGENSEN, 1928.
„ <i>hystrix</i> DUN.	12		„ „
„ <i>insulae-paschalis</i> RIT- TER	12		„ „
„ <i>insulae-paschalis</i> HORT.	12		DE VILMORIN & SIMONET, 1928.
„ <i>integrifolium</i> POIR. . . .	12		„ „ „ „ 1927a.
„ <i>integrifolium</i> POIR (= <i>S. texanum</i> DUN.)	12		„ „ „ „ 1928.
„ <i>Jamesii</i> TORR.	12		SMITH, H. B. 1927; DE VILMORIN & SIMONET, 1927a, 1928
„ <i>jasminoides</i> PANT	12		DE VILMORIN & SIMONET, 1927a 1928; JÖRGENSEN, 1928
„ <i>laciniatum</i> AIT	24		DE VILMORIN & SIMONET, 1927a
„ <i>laciniatum</i> AIT. (= <i>S. aviculare</i> FORST. f.)	24		„ „ „ „ 1928.
„ <i>luteum</i> MILL. (= <i>S. tomentosum</i> LAM.)	24		JÖRGENSEN & CRANE, 1927.
„ <i>lycopersicum</i>	12		WINKLER, 1910, 1916; EAST, 1915; LESLEY & MANN, 1925, LESLEY, M. M., 1926.
„ <i>lycopersicum</i> L.	12		DE VILMORIN & SIMONET, 1927a 1928.
„ <i>lycopersicum</i> (chimac- ra)	12	24	JÖRGENSEN, 1928.
„ <i>lycopersicum</i> (triploid)		24 & 48 ¹⁾	LESLEY, M. M., 1925.
		36	LESLEY & MANN, 1925.
	12 ₃ ²⁾	36	LESLEY, M. M. 1926.
„ <i>lycopersicum</i> (tetra- ploid) ³⁾	24 ⁴⁾	48	JÖRGENSEN, 1928.
„ <i>lycopersicum</i> L. varie- ties:			
<i>Balch's Fillbasket</i>	12		JÖRGENSEN & CRANE, 1927.
	12 ₃ ⁵⁾	36	JÖRGENSEN, 1928.
<i>Danish Export</i>		36	JÖRGENSEN, 1928.
		48	„ „

¹⁾ In previous list, GAISER (1926), this was incorrectly given as 12 & 24 in the diploid column.

²⁾ At diakinesis 12 trisomes were usually found.

³⁾ JÖRGENSEN (1928, p. 151) states that tetraploids had been found in the variety „Danish Export”, the variety cross „Sutton's Best of All × Potato Leaf” and in the grafted stock „Satisfaction.”

⁴⁾ There was a tendency to form tetrasomes.

⁵⁾ The arrangement as 12 trisomes was found only in a small proportion of cells. In the majority of the cells bivalents and univalents were found.

SOLANACEAE (continued)	n	2n	
<i>Dwarf Champion</i>		24	LESLEY, J. W., 1926.
		36	" " 1928.
<i>Early Dwarf Red</i>	12		JÖRGENSEN & CRANE, 1927.
<i>Globe</i>		36	LESLEY, J. W., 1926.
<i>Large Yellow</i>	12		JÖRGENSEN & CRANE, 1927.
<i>Livingston's Dwarf Aristocrat</i>		36	LESLEY, J. W., 1928.
<i>Stone</i>		36	" " "
<i>Sutton's Best of All</i>	12		JÖRGENSEN & CRANE, 1927.
<i>Dwarf Aristocrat</i> × <i>Globe</i> F ₁		26 ¹⁾	LESLEY, J. W., 1926.
<i>Dwarf Aristocrat</i> × <i>Globe</i> F ₂	11+13	25	" " "
<i>Livingston's Dwarf Aristocrat</i> (diploid × triploid) F ₁		24-27 ²⁾	" " 1928.
<i>Solanum macrocarpon</i>		72 ³⁾	STOMPS, 1925.
" <i>macrophyllum</i> HORT.	12		DE VILMORIN & SIMONET, 1927a
			1928.
" <i>marginatum</i> LINNE f.	12		DE VILMORIN & SIMONET, 1927a
			1928.
" <i>melongena</i> ⁴⁾	12	24	KOJIMA, 1925.
" <i>melongena</i> L.	12		DE VILMORIN & SIMONET, 1927a
			1928.
" <i>memphiticum</i> GMEL.	36		JÖRGENSEN, 1928.
" <i>miniaturum</i> BERNH.	24		" "
" <i>miniaturum</i> BENCH (=			
<i>S. alatum</i> MOENCH	24		DE VILMORIN & SIMONET, 1928.
" <i>muricatum</i> AIT.	14-16	> 23	NANNETTI, 1912.
" <i>muricatum</i> AIT.	12		DE VILMORIN & SIMONET, 1927a
" <i>nigrum</i> L.	36		WINKLER, 1910, 1921; JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1927a,
			1928.
	36	72	WINKLER, 1916; JÖRGENSEN,
			1928.
		72	STOMPS, 1925.
" <i>nigrum</i> L. (haploid)	3+30 ₁	36	JÖRGENSEN, 1928.
	$\frac{2}{2}$		
	11+14 ₁		
	$\frac{2}{2}$		
	12+12 ₁		
	$\frac{2}{2}$		

¹⁾ Two double trisomic plants were found.

²⁾ There were 9 simple trisomes (2n = 25) types, including an extra one of the 9 chromosomes of each type. There were also disomic (2n = 26) and trisomic (2n = 27) forms.

³⁾ Some syndiploid nuclei showed 144 chromosomes.

⁴⁾ For 6 of 21 varieties investigated the haploid number was determined.

SOLANACEAE (continued)	n	2n	
<i>Solanum</i> (continued)			
<i>Solanum nigrum</i> L. (triploid) .	50-65	ca. 108	JÖRGENSEN, 1928.
„ <i>nigrum</i> L. (tetraploid)	72	140-150	„ „
„ <i>nigrum</i> var. <i>gigas</i> . .	72	144	WINKLER, 1916, 1921.
„ <i>nigrum</i> var. <i>gracile</i>			
RADDI	36		JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1928.
„ <i>nigrum</i> var. <i>humile</i>			
BENCH		36	„ „ „
„ <i>ovigerum</i> DUN. . . .	12		DE VILMORIN & SIMONET, 1927a 1928.
„ <i>Pseudocapsicum</i> L. .	12		DE VILMORIN & SIMONET, 1928.
„ <i>Pseudo-maglia</i> HORT.	12		DE VILMORIN & SIMONET, 1927 1928.
„ <i>pyracanthum</i> JACQ. .	12		DE VILMORIN & SIMONET, 1927a 1928; JÖRGENSEN, 1928.
„ <i>quercifolium</i> L. . . .	12		JÖRGENSEN, 1928.
„ <i>racemiflorum</i> DUN. .	12		„ „
„ <i>Roberti-Eliae</i> BITTER	36		„ „
„ <i>Robinsonianum</i> BIT- TER	36		„ „
„ <i>suffruticosum</i>			
SCHAMBR	12		„ „
„ <i>sysimbriifolium</i> LAM. .	12		JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>Tomato</i> PHIL. f. . . .	12		DE VILMORIN & SIMONET, 1928.
„ <i>triflorum</i> NUTT. . . .	12		„ „ „ „ „
„ <i>tuberosum</i>		ca. 36	NĚMEC, 1899.
		33-34	MARTINS MANO, 1905.
	14-16		YOUNG, 1923.
		± 36	MÜLLER, K., 1925.
„ <i>tuberosum</i> (domestic)	24		(ADAMS) given by SALAMAN, 1928.
„ <i>tuberosum</i> L.	24		JÖRGENSEN, 1928.
„ <i>tuberosum</i> var.	24		DE VILMORIN & SIMONET, 1927a
„ <i>tuberosum</i> varieties:			
<i>Akita Poraris</i>		48	FUKUDA, 1927.
<i>Akita Usukawa</i>		48	„ „
<i>American Wonder</i>	24		STOW ¹⁾ , 1926-27.
		48	FUKUDA, 1927.

¹⁾ Stow (1926-27) stated that abnormal division in the pollen mother-cells was shown in a greater degree in the group American Wonder, Burbank's Seedling, Ekishirazu, Green Mountain, Michigan, Nemuro Murasaki, Rural New Yorker, and Snowflake, than in the other varieties studied by him.

SOLANACEAE (continued)	n	2n	
<i>Beauty of Hebron</i>		48	FUKUDA, 1927.
<i>Bella donna</i>	24		STOW, 1926, 1926-27.
<i>Bishop</i> HORT.		48	DE VILMORIN & SIMONET, 1928.
<i>Bovee</i>		48	FUKUDA, 1927.
<i>Burbank's Seedling</i>	24		STOW, 1926-27.
<i>Deodara</i>	24		" "
<i>Early Beauty of Hebron</i> . . .		48	FUKUDA, 1927.
<i>Early Mother</i>		48	" "
<i>Early Ohio</i>		48	" "
	24 & ca. 48		SMITH, 1927.
<i>Early Puritan</i>		48	FUKUDA, 1927.
<i>Early Rose</i>		ca. 36 ¹⁾	LUTMAN, 1925.
		48	FUKUDA, 1927; SMITH, H. B., 1927.
<i>Early Rose</i> HORT.	24		DE VILMORIN & SIMONET, 1928.
	48		" " " "
<i>Ekishirazu</i>	24		STOW, 1926-27.
<i>Ekishirazu</i> No. 12		48	FUKUDA, 1927.
<i>Ekishirazu</i> No. 45		48	" "
<i>Eureka</i>		48	" "
<i>Gratiola</i>	24		STOW, 1926, 1926-27.
<i>Green Mountain</i>		ca. 36 ¹⁾	LUTMAN, 1925.
	24		STOW, 1926-27.
<i>Irish Cobbler</i>		ca. 36 ¹⁾	LUTMAN, 1925.
		48	FUKUDA, 1927.
<i>Iwata Akaimo</i>		48	" "
<i>Kamiyaimo</i>		48	" "
<i>King Edward VII</i>		48	" "
<i>Look Out Mountain</i>		ca. 36 ¹⁾	LUTMAN, 1925.
<i>Majoran</i>		48	FUKUDA, 1927.
<i>Marschal Hindenburg</i> . . .	24		STOW, 1926, 1926-27.
<i>May Queen</i>		48	FUKUDA, 1927.
<i>McCormick</i>	24		SMITH, H. B., 1927.
<i>McIntyre</i>	24		SMITH, H. B., 1927.
<i>Michigan</i>	24		STOW, 1926-27.
<i>Morioka Kairyo</i>		48	FUKUDA, 1927.
<i>Moustache Leaved Kidney</i> . .		48	" "
<i>Nemuro</i>		48	" "
<i>Nemuro murasaki</i>	24		STOW, 1927-27
<i>Nemuro No</i>		48	FUKUDA, 1927.
<i>Northern Star</i>		48	" "
<i>Parnassia</i>	24		STOW, 1926, 1926-27.

¹⁾ Counts ranged from 36 to 45.

SOLANACEAE (continued)	n	2n	
<i>Pepo</i>	24		STOW, 1926, 1926-27.
<i>Pepo</i> HORT.	24		DE VILMORIN & SIMONET, 1928.
<i>Pirola</i>	24		STOW, 1926, 1926-27.
<i>Reeves Rose</i>		48	FUKUDA, 1927.
<i>Rural New Yorker</i>	24		STOW, 1926-27.
		48	FUKUDA, 1927.
<i>Russet Rural</i>	24 & 48		SMITH, H. B., 1927.
<i>Sir John le Lewelyn</i>		48	FUKUDA, 1927.
<i>Snowflake</i>	24		STOW, 1926-27.
		48	FUKUDA, 1927.
<i>Tuno</i>	24		STOW, 1926, 1926-27.
<i>Wase Shiro</i>		48	FUKUDA, 1927.
<i>Solanum tuberosum</i> var. <i>oculosum</i> ALEF. „ <i>Pirozhof</i> ”		48-59	LEVITSKY & BENETZKAJA, 1927.
„ <i>tuberosum</i> var. <i>oculosum</i> ALEF. „ <i>Tannenzapfen</i> ”		48, 49, 53	LEVITSKY & BENETZKAJA, 1927.
„ <i>tuberosum</i> var. <i>oculosum</i> ALEF. „ <i>Woltmann</i> ” ¹⁾		48-50	LEVITSKY & BENETZKAJA, 1927
„ <i>utile</i>	36		(ADAMS) given by SALAMAN, 1928.
„ <i>villosum</i> MOENCH.	24		DE VILMORIN & SIMONET, 1927a
„ <i>villosum</i> WILD. (= <i>S. luteum</i> WILD)	24		DE VILMORIN & SIMONET, 1928.
„ <i>Wendlandi</i> HOOK. f.	12		DE VILMORIN & SIMONET, 1928.
„ <i>xanthocarpum</i> SCHRAD. et WENDL.	12		JÖRGENSEN, 1928.
„ <i>Zuccagnianum</i> DUN.	12		„ „
„ <i>nigrum</i> × <i>S. luteum</i> . $24 + 12_1^{(2)}$ $\frac{2}{2}$		60	„ „
„ <i>nigrum</i> × <i>S. luteum</i> (tetraploid)	60 ³⁾	ca. 120	„ „
„ <i>utile</i> × <i>S. tuberosum</i> F ₁	$24 + 12_1^{(4)}$ $\frac{2}{2}$		(ADAMS) given by SALAMAN, 1928.

¹⁾ Syndiploid plates were found in this species.

²⁾ Though such arrangement was clear in some cells, in most cells it could not be definitely ascertained. In the division leading to megaspore formation some of the univalents were usually not included in the nuclei.

³⁾ Some irregularities occurred.

⁴⁾ At homeotypic metaphase the number varied from 25 to 39, with 29, 30 and 31 predominating. Many chromosomes were not included in the nuclei of the tetrad.

SOLANACEAE (continued)	n	2n
Solanum (continued)		
<i>Solanum utile</i> × <i>S. tuberosum</i>		
F ₂ ¹⁾	27-30,	48-60, (ADAMS) given by SALAMAN, 1928.
	30-38	60-72 (ADAMS) given by SALAMAN, 1928.
<i>Solanandra grandiflora</i> Fw. . . .	11,(12)	CAMPIN, 1924.
NICOTIANA ²⁾		
Section <i>Tabacum</i>		
<i>Nicotiana Rusbyi</i>	12	BRIEGER, 1928a.
" <i>Rusbyi</i> BRITT.	12	" 1927, 1928b.
" <i>Tabacum</i> ³⁾	24	WHITE, O. E., 1913; GOOD-SPEED, 1923, 1924; CLAUSEN & MANN, 1924; CLAUSEN & GOODSPEED, 1925, 1926a; CLAUSEN, R. E., 1928b; BRIEGER, 1928a.
	24	48 CHRISTOFF, 1925.
" <i>Tabacum</i> L.	24	54-56 NIKOLAWEA (1924), 1925.
		DE VILMORIN & SIMONET, 1927a, 1928.
" <i>Tabacum</i> L. var. <i>angustifolia</i> MILL. . .	24	DE VILMORIN & SIMONET, 1927a, 1928.
" <i>Tabacum</i> var. <i>Dubek</i>	24	48 EGHIS, 1927.
	24	48 ⁴⁾ RYBIN, 1927b.
" <i>Tabacum</i> L. var. <i>fruticosa</i> HORT.	24	DE VILMORIN & SIMONET, 1927a, 1928.
" <i>Tabacum</i> L. var. <i>havanensis</i> (Cuba) . .	24	CHRISTOFF, 1925, 1928; BRIEGER, 1927, 1928b.
		24 ⁵⁾ RUTTLE, 1928.
" <i>Tabacum</i> L. var. <i>macrophylla</i>	24	48 CHRISTOFF, 1925, 1928.

¹⁾ Families of two types were produced.

²⁾ This classification under sections is according to EAST (1928a), following COMES (1899).

³⁾ GOODSPEED (1924) states that he examined 5 varieties of this species.

⁴⁾ According to RYBIN (1927b) the chromosomes of *N. Tabacum* var. *Dubek* are more alike in size, while those of *N. rustica* (Turkestan var. *Kolmak*) were found to differ from one another in size.

⁵⁾ Two such haploids appeared in an F₁ (*Cuba* × *sylvestris*) population. In both this haploid and the haploid *purpurea* plant, examination of root-tips showed that roots were either entirely diploid, entirely haploid, or part haploid and part diploid.

SOLANACEAE (continued)		n	2n
NICOTIANA (continued)			
Section <i>Tabacum</i> (continued)			
<i>Nicotiana Tabacum</i> L. var. <i>purpurea</i>	24 ¹⁾		GOODSPEED & CLAUSEN, 1927b; GOODSPEED & OLSON, 1928.
		48	RUTTLE, 1928.
	$< \frac{24_1^{1)}}{2}$		GOODSPEED & OLSON, 1928.
	48		" " " "
	$\frac{24_1^{2)}}{2}$		CHIPMAN & GOODSPEED, 1927.
		24 ²⁾	RUTTLE, 1928.
„ <i>Tabacum</i> L. var. <i>sanguinea</i> HORT.	24		DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>Tabacum</i> L. var. <i>Sao Felix</i>		48	RYBIN, 1927b; EGHIS, 1927.
„ <i>Tabacum</i> L. (White flowering variety) .	24		CHRISTOFF, 1928.
„ <i>Tabacum</i> form „Corrugated”	23 + 1 ₁		CLAUSEN & GOODSPEED, 1926b.
„ <i>Tabacum</i> form „Enlarged”	24 + 1 ₁		" " " 1924.
„ <i>Tabacum</i> form „Fluted”	23 + 1 ₁ ³⁾		" " " 1926a.
„ <i>tomentosa</i>	12		GOODSPEED & CLAUSEN, 1927b; CLAUSEN, R. E., 1928b; BRIEGER, 1928a.
„ <i>tomentosa</i> R. & P.		24	CHRISTOFF, 1928.
Section <i>Rustica</i>			
<i>Nicotiana acuminata</i>	12		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928b.
„ <i>acuminata</i> GRAH.	12		CHRISTOFF, 1928.
„ <i>acuminata</i> HOOK.	12		VILMORIN & SIMONET, 1927a, 1928.

¹⁾ The result of X-raying seedlings (GOODSPEED & OLSON (1928)) was that half of the number contained 24 chromosomes at the heterotypic metaphase and showed normal division. The remainder showed abnormal somatic and meiotic divisions and the chromosome number in the pollen-mother-cells was less than normal (23, 21, 23 + 2₁, 23 + 1₁, 22 + 2₁). In three of the variants so produced, one univalent partner possessed a small appendage like a satellite. In cases with 21 and 22 + 2₁ chromosomes, one chromosome of a pair bore a satellite.

²⁾ This haploid appeared in an F₁ (*purpurea* × *sylvestris*) population described by CLAUSEN & MANN (1924). RUTTLE (1928) refers to another haploid, which appeared in an F₁ (*purpurea* × *tomentosa*) population as well.

³⁾ In most cases division of the one univalent did not occur.

SOLANACEAE (continued)		n	2n	
NICOTIANA (continued)				
Section <i>Rustica</i> (continued)				
<i>Nicotiana alata</i>	8-10			GOODSPEED, 1923.
	8			CHRISTOFF, 1925.
	9			GOODSPEED & CLAUSEN, 1927b; CLAUSEN, R. E., 1928b.
„ <i>alata</i> LINK (<i>N. affinis</i>)	9-10			DE VILMORIN & SIMONET, 1927c
	9 ¹⁾			GOODSPEED, 1924; DE VILMORIN & SIMONET 1928.
„ <i>alata</i> LK. & OTTO . .	8	16		CHRISTOFF, 1928.
„ <i>alata</i> var. <i>grandiflora</i>	9 ²⁾	18 ³⁾		RUTTLE, 1927.
„ <i>angustifolia</i>	10			CLAUSEN, R. E., 1928b.
„ <i>attenuata</i>	12			„ „ „ „
„ <i>viscosa</i> LEHM (= <i>N. attenuata</i> var.) ⁴⁾ .	24			CHRISTOFF, 1928.
„ <i>Bigelovii</i>	24			GOODSPEED, 1923, 1924; GOODSPEED & CLAUSEN, 1927a; CLAUSEN, R. E., 1928b.
„ <i>Bigelovii</i> WATS. . .	24	48		CHRISTOFF, 1928.
„ <i>Clevelandii</i> (= <i>N. Bigelovii</i> var (?) ⁴⁾	24			CLAUSEN, R. E., 1928b
„ <i>multivalvis</i> (= <i>N. Bigelovii</i> var.) ⁴⁾ .	24			„ „ „ „
„ <i>multivalvis</i> PURSH. (= <i>N. Bigelovii</i> var.) ⁴⁾	24			CHRISTOFF, 1928.
„ <i>quadrivalvis</i> (= <i>N. Bigelovii</i> var.) ⁴⁾	24			CLAUSEN, R. E., 1928b.
„ <i>quadrivalvis</i> LINDL. (= <i>N. Bigelovii</i> var.) ⁴⁾	24			CHRISTOFF, 1928.
„ <i>caudigera</i> RH. . . .	12	24		„ „ „ „
„ <i>cordifolia</i>	12			CLAUSEN, R. E., 1928b.
„ <i>Forgetiana</i>	9			MALLOCH & MALLOCH, 1924; CLAUSEN, R. E., 1928b; DE VILMORIN & SIMONET, 1928.
„ <i>Forgetiana</i> HORT. . .	9-10			DE VILMORIN & SIMONET, 1927a

¹⁾ GOODSPEED (1:24) found 10 chromosomes frequently, but considered 9 to be the predominating number.

²⁾ As a result of non-disjunction, 8 and 10 chromosomes could be counted in the divisions in the pollen-mother-cells.

³⁾ Two pairs of satellites were distinguished.

⁴⁾ This synonym was taken from EAST (1928a).

SOLANACEAE (continued)	n	2n	
Nicotiana (continued)			
Section Rustica (continued)			
<i>Nicotiana glauca</i>	12		GOODSPEED, 1923, 1924; CLAUSEN, E. R., 1928b.
„ <i>glauca</i> GRAH.	12	24	CHRISTOFF, 1928.
„ <i>glutinosa</i>	12		GOODSPEED, 1923, 1924; CLAUSEN & GOODSPEED, 1925; GOODSPEED & CLAUSEN, 1927a; CLAUSEN, R. E., 1928b; BRIEGER, 1928a.
„ <i>glutinosa</i> L.	12		DE VILMORIN & SIMONET, 1927a, 1928.
„	12	24	CHRISTOFF, 1928.
„ <i>Langsdorfii</i> ¹⁾	9		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928b.
„	9	18	(KOSTOFF), given by EAST, 1928a.
„ <i>Langsdorfii</i> WEINM.	8	16	CHRISTOFF, 1928.
„ <i>longiflora</i>	10 ²⁾		GOODSPEED, 1923, 1924; GOODSPEED & CLAUSEN, 1927b; CLAUSEN, R. E., 1928b.
„ <i>longiflora</i> CAV.	10		CHRISTOFF, 1928; DE VILMORIN & SIMONET, 1928'
„ <i>plumbaginifolia</i> Viv. (= <i>N. longiflora</i> var.) ³⁾		20	CHRISTOFF, 1928.
„ <i>nudicaulis</i>	24		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928b.
„ <i>nudicaulis</i> WATS	24	48	CHRISTOFF, 1928.
„ <i>Palmeri</i> (?)	12	24	„ „
„ <i>paniculata</i>	12		GOODSPEED, 1923, 1924; GOODSPEED, CLAUSEN & CHIPMAN, 1926; CLAUSEN, R. E., 1928b.
„ <i>paniculata</i> L.	24		EAST, 1921.
„	12		EAST, 1928a; DE VILMORIN & SIMONET, 1927a, 1928.
„	12	24	CHRISTOFF, 1928.
„ <i>repanda</i>	24		CLAUSEN, R. E., 1928b.
„ <i>rustica</i> ⁴⁾	24		GOODSPEED, 1923, 1924; CHRISTOFF, 1925; CLAUSEN, R. E., 1928b.

¹⁾ GOODSPEED (1924) states that he examined 2 varieties of this species.

²⁾ GOODSPEED (1924) considered 10 to be the predominating number, though 9 or 10 chromosomes appeared.

³⁾ This synonym was taken from EAST (1928a).

⁴⁾ GOODSPEED (1924) states that he examined 3 varieties of this species.

SOLANACEAE (continued)	n	2n	
Nicotiana (continued)			
Section Rustica (continued)			
<i>Nicotiana rustica</i> L.	24	48-46	NIKOLAWEA, 1925. EAST, 1921; DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>rustica</i> var. <i>brasilia</i>	24		GOODSPEED, CLAUSEN & CHIP- MAN, 1926.
„ <i>rustica</i> L. var. <i>brasila</i>	24	48	CHRISTOFF, 1928.
„ <i>rustica</i> L. var. <i>humilis</i>	24		„ „
„ <i>rustica</i> var. <i>pumila</i> .	24		GOODSPEED, CLAUSEN & CHIP- MAN, 1926.
„ <i>rustica</i> var. <i>scabra</i> .	24		GOODSPEED, CLAUSEN & CHIP MAN, 1926.
„ <i>rustica</i> L. var. <i>Shvitzent</i> . .		48	RYBON, 1927b; EGHIS, 1927. CHRISTOFF, 1928.
„ <i>rustica</i> L. var. <i>texana</i>	24		
„ <i>rustica</i> L. <i>Turkestan</i> var. <i>Kolmak</i>	24	48 ¹⁾	RYBIN, 1927b. CHRISTOFF, 1928.
„ <i>Sanderae</i>	8		DE VILMORIN & SIMONET, 1927a
„ <i>Sanderae</i> HORT. . .	9-10		MALLOCH & MALLOCH, 1924; CLAUSEN, R. E., 1928b; DE VILMORIN & SIMONET, 1928.
	9		
„ <i>solanifolia</i>	12		CLAUSEN, R. E., 1928b.
„ <i>solanifolia</i> WALP. .	24		DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>solanifolia</i> WOLF. (<i>N.</i> <i>cardiophylla</i> RH. .	12	24	CHRISTOFF, 1928
„ <i>solanifolia</i> (?) (= <i>N.</i> <i>rustica</i> var. <i>humilis</i>)	24	28	„ „
„ <i>suaveolens</i>	18 ²⁾		GOODSPEED, 1923, 1924.
	16 ³⁾		GOODSPEED & CLAUSEN, 1927a; CLAUSEN, R. E., 1928b.
„ <i>suaveolens</i> LEHM. . .	16	32	CRISTOFF, 1928.

¹⁾ According to RYBIN (1927b) the chromosomes of *N. Tabacum* var. *Dubek* are more alike in size, while those of *N. rustica* (*Turkestan* var. *Kolmak*) were found to differ from one another in size.

²⁾ Though GOODSPEED (1924) gave a lower number, he stated that there was doubt as to its correctness because of the small amount of available material, and expressed the possibility that the number be 18.

³⁾ GOODSPEED & CLAUSEN (1927a) considered the previous determination ($n = 18$) to be incorrect.

SOLANACEAE (continued)		n	2n	
NICOTIANA (continued)				
Section Rustica (continued)				
<i>Nicotiana suaveolens</i> (from Australia)	20			(GOODSPEED), given by EAST, 1928a.
„ <i>suaveolens</i> (from Australia)	32			(GOODSPEED), given by EAST, 1928a.
„ <i>sylvestris</i>	12			GOODSPEED, 1923, 1924; CLAUSEN & MANN, 1924; CLAUSEN & GOODSPEED, 1926a; GOODSPEED & CLAUSEN, 1927b; CLAUSEN, R. E., 1928b; BRIEGER, 1928a.
„ <i>sylvestris</i> SPEG. & COMES	12			DE VILMORIN & SIMONET, 1927a, 1928.
	12	24		CHRISTOFF, 1928.
„ <i>trigonophylla</i>	12			CLAUSEN, R. E., 1928b.
„ <i>trigonophylla</i> DUN.	24			DE VILMORIN & SIMONET, 1927a, 1928.
	12	24		CHRISTOFF, 1928.
Section (?)				
<i>Nicotiana cerinthoides</i> VITUP.	9			DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>clarionensis</i>	24			CLAUSEN, R. E., 1928b.
„ <i>noctiflora</i> HOOK.	9			DE VILMORIN & SIMONET, 1927a, 1928.
„ <i>petiolaris</i> SCHLECHT.	24			DE VILMORIN & SIMONET, 1927a, 1928.
<i>Nicotiana</i> Hybrids:				
<i>Nicotiana alata</i> × <i>N. Langsdorffii</i>	8 ¹⁾			CHRISTOFF, 1923.
„ <i>Bigelovii</i> × <i>N. glutinosa</i>	12 & 24, 30 & 6, etc. ²⁾			GOODSPEED & CLAUSEN, 1927a
„ <i>Bigelovii</i> × <i>N. suaveolens</i> and recip.	18, 26 & 14, ²⁾ 39 & 1, etc.			„ „ „ „

¹⁾ Both heterotypic and homoeotypic divisions were regular.

²⁾ Apparently there is no pairing of chromosomes; there is great irregularity in the division of the chromosomes to the two poles.

SOLANACEAE (continued)

n

2n

NICOTIANA (continued)

Nicotiana Hybrids (continued):

*Nicotiana digluta*¹⁾ × *N. glutinosa*

$$12 + \frac{24_1}{2}$$

CLAUSEN, R. E., 1928a, b.

" *digluta* × *N. Tabacum*

$$24 + \frac{12_1}{2}$$

" " " " "

" *digluta* × *N. Tabacum* F₂

$$24 + \frac{0_1 - 8_1}{2}$$

" " " "

" *digluta* × *N. Tabacum* (× *N. Tabacum*)

$$24 + \frac{0_1 - 8_1^{2)}}{2}$$

" " " "

" *digluta* × *N. Tabacum* (× *N. digluta* . m + n₁³⁾)

$$m + \frac{n_1}{2}$$

" " " "

" *glaucifolia* × *N. Langsdorffii*

$$9 + \frac{3_1^{4)}}{2}$$

(KOSTOFF), given by EAST, 1928a.

" *glaucifolia* × *N. Langsdorffii* × *N. Langsdorffii*

$$21^{5)}, 30,$$

(KOSTOFF, given by EAST, 1928a.

glutinosa × *N. Tabacum* var. *purpurea*⁴⁾

$$12 + \frac{0_1 - 12_1^{6)}}{2}$$

CLAUSEN & GOODSPEED, 1925.

36 CLAUSEN, R. E., 1928b.

" *glutinosa* × *N. Tabacum* var. *purpurea* F₂

$$36^{7)}$$

CLAUSEN, & GOODSPEED, 1925.

" *longiflora* × *N. alata*

$$9 + 1_1$$

GOODSPEED & CLAUSEN, 1927b.

¹⁾ This name has been applied to a line of plants coming from the F₁ of *N. glutinosa* × *N. Tabacum* having 36 haploid chromosomes. (CLAUSEN & GOODSPEED, 1925). See this hybrid below.

²⁾ In one plant there were 25 + 2₁.

³⁾ m was = or > 24 and m + n = 36.

⁴⁾ Reduction division follows the *Drosophila* scheme.

⁵⁾ This chromosome number is made up as follows: (2₃ + 7₂ + 1₁ = 21 = 2n).

⁶⁾ The behavior of the chromosomes in this hybrid closely parallels that seen in the F₁ of *N. Tabacum* and *N. sylvestris*.

⁷⁾ There were no univalents and all the chromosomes moved to the poles in a regular way.

SOLANACEAE (continued)	n	2n	
Nicotiana Hybrids (continued):			
<i>Nicotiana longiflora</i> × <i>N. Sanderae</i>	$8 + \frac{2_1^1}{2}$		CHRISTOFF, 1928.
„ <i>paniculata</i> × <i>N. Langsdorfii</i>	$\frac{18_1^2}{2}$	„	„
„ <i>rustica</i> × <i>N. paniculata</i>	$12 + \frac{6_1^3}{2}$	„	„
„ <i>rustica</i> var. <i>brasilia</i> × <i>N. paniculata</i>	$12 + \frac{1_1 - 6_1^4}{2}$		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ <i>rustica</i> var. <i>brasilia</i> × <i>N. paniculata</i>) × <i>N. paniculata</i>	$12 + \frac{1_1 - 11_1^5}{2}$		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ <i>rustica</i> var. <i>brasilia</i> × <i>N. paniculata</i>) × <i>N. rustica</i> var. <i>brasilia</i>	$18 + \frac{1_1 - 6_1}{2}$ $24 + \frac{0_1 - 4_1}{2}$		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ <i>rustica</i> × <i>N. paniculata</i>) × <i>N. Langsdorfii</i>		24, 32 ⁶	(KOSTOFF), given by EAST, 1928a.
„ <i>rustica</i> × <i>N. Tabacum</i> (white)	$\frac{48_1^7}{2}$		CHRISTOFF, 1928.
„ <i>rustica</i> × <i>L.</i> var.			

¹) Reduction division follows the *Drosera* scheme. Regularly two univalents lagged outside the plate but cases showing four were found.

²) No bivalents were observed but distribution to the two poles is fairly regular.

³) The number of chromosomes in the two homoeotypic plates shows fairly even distribution of the univalents along with the bivalents has occurred on the heterotypic spindle.

⁴) On the heterotypic spindle the twelve bivalents were distributed regularly to the poles, but the twelve univalents, irregularly and without division.

⁵) In general, conditions were similar to those described in foot-note ¹), but there were evidences of division of univalents on the heterotypic spindle in some cases.

⁶) Where 2n = 24, one trivalent was present. Where 2n = 32, five trivalents were present.

⁷) The first division was so regular as to make it difficult to be certain whether pairs had been formed or not. Very irregular homoeotypic division followed with frequent formation of diads instead of tetrads.

SOLANACEAE (continued)		n	2n	
Nicotiana Hybrids (continued):				
<i>Shvitzen</i> × <i>N. Tabacum</i> var. <i>Dubek</i>			48	EGHIS, 1927.
<i>Nicotiana rustica</i> var. <i>Mahorka</i> #1 × (<i>N. Tabacum</i> L. var. <i>Dubek</i> × <i>N. rustica</i> var. <i>Kolmak</i>)			67-72	RYBIN, 1927b.
(„ <i>rustica</i> × <i>N. Tabacum</i> var. <i>sanguinea</i>) × <i>N. Tabacum</i> var. <i>sanguinea</i>	36-38	70-72	(KOSTOFF), given by EAST, 1928a.	
	32	53 ¹⁾	(KOSTOFF), given by EAST, 1928a.	
[(<i>Nicotiana rustica</i> × <i>N. Tabacum</i> var. <i>sanguinea</i>) × <i>N. Tabacum</i> var. <i>sanguinea</i>] × <i>N. Tabacum</i> var. <i>sanguinea</i> .	30 ²⁾		(KOSTOFF), given by EAST, 1928a.	
<i>Nicotiana suaveolens</i> × <i>N. Bigelovii</i>	$\frac{40_1}{2}$ ³⁾		CHRISTOFF, 1928.	
„ <i>suaveolens</i> × <i>N. glutinosa</i>	$\frac{28_1}{2}$ ⁴⁾		„ „	
„ <i>sylvestris</i> × <i>N. Tabacum</i>	$\frac{12+12_1}{2}$		CLAUSEN, R. E., 1928b; GOOD-SPEED & CLAUSEN, 1928.	
„ <i>sylvestris</i> × <i>N. Tabacum</i> vars. <i>angustifolia</i> „Cuba and Miradato”	$\frac{12+12_1}{2}$		GOODSPEED, 1923.	
„ <i>sylvestris</i> × <i>N. Tabacum</i> form „fluted”	$\frac{12+1_1-11_1}{2}$		CLAUSEN & GOODSPEED, 1926a.	

¹⁾ One plant having 32 chromosomes at first metaphase had only 53 somatic chromosomes.

²⁾ One plant of this second back-cross was found to have 30 chromosomes at the first metaphase.

³⁾ There is no pairing and the chromosomes are scattered very irregularly over the spindle during the first division. The second division is regular and all the chromosomes on the spindles undergo an equational split, leaving some of the descendants of the lagging chromosomes of the first division to form micro nuclei.

⁴⁾ No bivalents were observed and many lagging chromosomes appeared in the anaphase figures.

SOLANACEAE (continued)		n	2n
Nicotiana Hybrids (continued):			
<i>Nicotiana sylvestris</i> × <i>N. Tabacum</i> var. <i>purpurea</i>		$12 + \frac{0_1 - 12_1^{1)}}{2}$	GOODSPEED & CLAUSEN, 1927b.
„ <i>sylvestris</i> × <i>N. Tabacum</i> var. <i>purpurea</i>)			
× <i>N. sylvestris</i> . . .		$12 + \frac{0_1 - 12_1}{2}$	GOODSPEED & CLAUSEN, 1927b, 1928.
„ <i>sylvestris</i> × <i>N. tomentosa</i>		$\frac{24_1}{2}$	CLAUSEN, R. E., 1928b; GOODSPEED & CLAUSEN, 1928.
„ <i>Tabacum</i> var. <i>Cuba</i> × <i>N. alata</i>		$8 + \frac{16_1^{2)}}{2}$	CHRISTOFF, 1928.
„ <i>Tabacum</i> × <i>N. glauca</i> ,		$12 + \frac{12_1^{3)}}{2}$	(KOSTOFF), given by EAST 1928a.
„ <i>Tabacum</i> × (<i>N. Langsdorfii</i> × <i>N. Sanderae</i>)			33 (KOSTOFF), given by EAST 1928a.
„ <i>Tabacum</i> L. var. <i>Cuba</i> × <i>N. Rusbyi</i> BRITT.		$12 + \frac{12_1}{2}$	BRIEGER, 1927, 1928b.
(„ <i>Tabacum</i> L. var. <i>Cuba</i> × <i>N. Rusbyi</i> BRITT.) × <i>N. Tabacum</i> L. var. <i>Cuba</i>		24	48 BRIEGER, 1928b.
(„ <i>Tabacum</i> L. var. <i>Cuba</i> × <i>N. Rusbyi</i> BRITT.) × <i>N. Tabacum</i> L. var. <i>Cuba</i> ; Plant 1E		$24 - 36^{4)}$	60 „ „
(„ <i>Tabacum</i> L. var. <i>Cuba</i> × <i>N. Rusbyi</i> BRITT.) × <i>N. Tabacum</i>			

¹⁾ On the heterotypic spindle the 12 bivalents are distributed regularly to the poles but the 12 univalents irregularly and without division.

²⁾ Reduction division was quite irregular, bivalents forming a plate while univalents passed to the poles, some presumably dividing, since as many as 38 were found on the two homoeotypic plates³⁾

³⁾ Reduction division follows the *Drosera* scheme.

⁴⁾ Each daughter nucleus received at least 24 and not more than 36 chromosomes. The arrangement at heterotypic metaphase is represented by $12 + 12_s$ or $12 + (2_s + 10 + 10_1)$.

SOLANACEAE (continued)		n	2n	
Nicotiana Hybrids (continued)				
	<i>cum</i> L. var. <i>Cuba</i> ;			
	Plant 8B	27-30 ¹⁾	54	BRIEGER, 1928b.
	<i>Nicotiana Tabacum</i> L. var. <i>Dubek</i> × <i>N. rustica</i> L.			
	var. <i>Kolmak</i>	48 ²⁾	72	RYBIN, 1927b
			48	EGHIS, 1927
"	<i>Tabacum</i> L. var. <i>Dubek</i> × <i>N. rustica</i> L.			
	var. <i>Shvitzent</i>		72	RYBIN, 1927b.
(, "	<i>Tabacum</i> L. var. <i>Dubek</i> × <i>N. rustica</i> L.			
	var. <i>Kolmak</i>) × <i>N. rustica</i> L. var. <i>texana</i>	48 ³⁾	96	" "
"	<i>Tabacum</i> (white) × <i>N. Sanderae</i>	$8 + \frac{16_1}{2}$ ⁴⁾		CHRISTOFF, 1928.
	<i>Tabacum</i> var. <i>macrophylla</i> × <i>N. sylvestris</i> ⁵⁾		24	CLAUSEN & MANN, 1924.
"	<i>Tabacum</i> var. <i>purpurea</i> × <i>N. sylvestris</i> .		24	" " " "
"	<i>tomentosa</i> × <i>N. Tabacum</i>	$12 + \frac{0-12_1}{2}$ ⁶⁾		GOODSPEED & CLAUSEN, 1927b.
		$\frac{12+12_1}{2}$		CLAUSEN, R. E., 1928b; GOODSPEED & CLAUSEN, 1928.
"	<i>Tabacum</i> × <i>Verbascum phlomoides</i> . .		<54-56 ⁷⁾	NIKOLAEWA, 1925.

¹⁾ Each daughter nucleus received 24 to 30 chromosomes in one case and 18 to 36 in another case. At the heterotypic metaphase 29-30 were the predominating numbers.

²⁾ Differences in the sizes of these 48 chromosomes led RYBIN (1927b) to suppose that they were 24 bivalents and 24 univalents, though the exact number of the latter was not determined. Both hetero- and homoeotypic metaphases showed great irregularities.

³⁾ RYBIN (1927b) found great regularity in the meiosis of this hybrid and though more than 48 chromosomes were frequently seen in the heterotypic metaphase, such was explained by premature separation of some of the chromosomes.

⁴⁾ Reduction divisions resemble those of *N. Tabacum* × *N. alata* (See foot-note ²⁾ previous page).

⁵⁾ This was incorrectly given in GAISER (1926).

⁶⁾ "The distributional mechanism is the same as that in *F₁ paniculata-rustica* and *F₁ sylvestris-tabacum*." (GOODSPEED & CLAUSEN, 1927b). See foot-note ⁴⁾ p. 308.

⁷⁾ By pollination of castrated flowers of *N. Tabacum* by pollen of *Verbascum phlomoides*, pollen tubes were formed but never reached the ovules. Some ovules seeme to develop as a result of the irritation and had cells like *N. Tabacum*, but with less chromosomes.

SOLANACEAE (continued)	n	2n
<i>Salpiglossis sinuata</i> RUIZ. et		
PAR.	22	DE VILMORIN & SIMONET, 1928.
<i>Petunia nyctaginiflora</i> JUSS. .	7	FERGUSON, M., 1928.
„ <i>violacea</i> LINDL. ¹⁾ . .	7	14 SKALINSKA & CUCHTMAN, 1927,
„ <i>violacea</i>	7 ²⁾	MATSUDA, 1928.
„ <i>violacea</i> LIND. (varie- gated strain)		14 ³⁾ MALINOWSKI, 1928.
„ <i>violacea</i> hybrid var. Hort.	7	DE VILMORIN et SIMONET, 1927a, 1928.
„ <i>violacea</i> „ <i>Superbissi-</i> <i>ma</i> ”	14	DE VILMORIN et SIMONET, 1927a 1928.
<i>Datura fastuosa</i> L.	12	DE VILMORIN & SIMONET, 1927a 1928.
„ <i>ferox</i>	12	BLAKESLEE, 1928.
„ <i>Leichardtii</i>	12	„ „
„ <i>meteloides</i>	12	„ „
„ <i>meteloides</i> D.C.	12	DE VILMORIN & SIMONE T, 1927 1928
„ <i>quercifolia</i>	12	BLAKESLEE, 1928.
„ <i>Stramonium</i> ⁴⁾		24 BLAKESLEE, BELLING & FARN- HAM, 1923.
	12	BELLING, 1927a, d; BLAKESLEE 1928.
„ <i>Stramonium</i> (haploid) ⁴⁾	12	BLAKESLEE, MORRISON, AVERY 1927; BELLING, 1927a, d.
	12 ⁵⁾	BELLING & BLAKESLEE, 1927.
„ <i>Stramonium</i> (mutants) ⁴⁾	11 + 1 ₁	BELLING, 1927a, d.
	11 + 1 ₃	BELLING, 1927a, d; GAGER & BLAKESLEE, 1927 ⁶⁾ .
	11 + 2	GAGER & BLAKESLEE, 1927 ⁶⁾
	12 ₄	BLAKESLEE, BELLING & FARN- HAM, 1923, BELLING, 1927d.
	11 ₃ + 1 ₂	BELLING, 1927d.

¹⁾ The extreme types of this polymorphic race showed no differences in chromosome number but in chromosome form. In zygomorphic flowers satellites might be found but in normal flowers rarely. Variation in the gametic chromosome sets occur at the heterotypic metaphase.

²⁾ Besides cells showing normal arrangement as 7 pairs, there were cells showing 6 paired + 2 univalents. Irregularities in division also occurred.

³⁾ In large purple flowers of this strain the chromosomes were larger than in the small lilac flowers.

⁴⁾ For earlier references, see GAISER, 1926, pp. 436—437.

⁵⁾ From this 1A haploid line, all the balanced chromosomal types, as well as all primary and secondary (2n + 1) types, have been obtained.

⁶⁾ As a result of radium emanations, GAGER & BLAKESLEE (1927) produced 2n + 1 and 2n + 2 chromosomal types.

SOLANACEAE (continued)	n	2n	
<i>Datura</i> (continued)			
<i>Datura Stramonium</i> (Primary Mutants) ¹⁾ :		25	BELLING & BLAKESLEE, 1926.
<i>Buckling, Cocklebur, Echinus</i>			
<i>Elongate, Globe, Glossy,</i>			
<i>Ilex, Microcarpic, Poinsettia, Reduced, Rolled . . .</i>		25	BLAKESLEE given by DAVENPORT, 1924, 1926; BLAKESLEE, 1925.
<i>Globe</i>		26	BLAKESLEE given by DAVENPORT, 1926.
<i>Divergent</i>		25	BLAKESLEE given by DAVENPORT, 1926.
<i>Reduced</i>		26	BLAKESLEE given by DAVENPORT, 1926.
<i>Spinach</i>		25	BLAKESLEE, given by DAVENPORT, 1924, 1926.
<i>Datura Stramonium</i> „Nubbin” ²⁾		25	BLAKESLEE given by DAVENPORT, 1925, 1926; GAGER & BLAKESLEE, 1927.
„ <i>Stramonium</i> „Poinsettia”		25	BLAKESLEE & FARNHAM, 1923.
„ <i>Stramonium</i> „Wiry” .	24 + $\frac{1}{2}$		BLAKESLEE given by DAVENPORT, 1924; BLAKESLEE, 1925.
„ <i>Stramonium</i> (Secondary Mutants) ¹⁾ . . .		25	BELLING & BLAKESLEE, 1926.
<i>Maple, Mutilated, Polycarpic, Strawberry, Sugarloaf, Undulate, Wedge</i>		25	BLAKESLEE given by DAVENPORT, 1924, 1925, 1926; BLAKESLEE, 1925.
<i>Dwarf, Scalloped, Smooth . .</i>		25	BLAKESLEE, 1925; BLAKESLEE, given by DAVENPORT, 1925, 1926.
one secondary mutant . . .	24 + $\frac{1}{2}$		BELLING, 1927a.
<i>Datura Stramonium</i> „Hedge” .		25	BLAKESLEE given by DAVENPORT, 1926.
„ <i>Stramonium</i> „Pinched”		25	BLAKESLEE given by DAVENPORT, 1926.
„ <i>tatula</i>	12		VON BOENICKE, 1911
„ <i>Leichardtii</i> × <i>D. meteloides</i>	12		BLAKESLEE, 1928.

¹⁾ For earlier references, see GAISER 1926, pp. 436—437.

²⁾ „Nubbin” was found to be a compound chromosomal type containing the ordinary 2n set of chromosomes plus a chromosome consisting of 1/2 mutilated plus 1/2 strawberry. (BLAKESLEE, 1927).

SOLANACEAE (continued)

Datura (continued)

<i>Datura Leichardtii</i> × <i>D. quercifolia</i>	12	BLAKESLEE, 1928.
" <i>Stramonium</i> × <i>D. jerox</i>	12	" "
" <i>Stramonium</i> × <i>D. quercifolia</i>	12	" "
" <i>Stramonium</i> (2n = 48)		
× <i>D. Stramonium</i> (2n = 24)		24, 25, 35 BLAKESLEE, BELLING & FARNHAM, 1923.

SCROPHULARIACEAE

VERBASCUM ¹⁾Section I. *Lychnitis*Subsection I. *Lychnitidea*

<i>Verbascum austriacum</i> SCHOTT.	16 ²⁾	HÅKANSSON, 1926a.
" <i>Chaixii</i> VILL. . . . probably	16	" "
" <i>Lychnitis</i> L. . . .	16	" "
" <i>maurum</i> MAIRE & MURB.	32	" "
" <i>nigrum</i> L.	15	" "
" <i>Ternacha</i> HOCHST.	24	" "

Subsection II. *Blattarioides*

<i>Verbascum phoeniceum</i>	16	(PERINO) given by TISCHLER, 1916.
" <i>phoeniceum</i> L. . .	16	HÅKANSSON, 1926a.
" <i>pyramidatum</i> M.B.	16 ³⁾	" "

Section II. *Thapsus*Subsection I. *Blattaria*

<i>Verbascum Blattaria</i>	16	(PERINO) given by TISCHLER, 1916.
" <i>Blattaria</i> (white) .	15	30 HÅKANSSON, 1926a.
" <i>Blattaria</i> (yellow) .	16	" "
" <i>virgatum</i> WITH. . .	32	" "

Subsection II. *Euthapsi*

<i>Verbascum phlomoides</i>	16	(PERINO) given by TISCHLER, 1916.
"	16	32 NIKOLAEWA, 1925.
" <i>phlomoides</i> L. . . .	16	HÅKANSSON, 1926a.

¹⁾ The following species are classified under sections according to ENGLER & PRANTL

²⁾ The number of the chromosomes for this species was judged by the chromosome relations of one of its hybrids.

³⁾ The number of chromosomes for this species was calculated from the chromosome number of *V. densiflorum* (n = 16), which is the hybrid *V. phoeniceum* (n = 16) × *V. pyramidatum*.

SCHROPHULARIACEAE (continued) n		2n	
<i>Verbascum thapsiforme</i> SCHRAD.		32	HÅKANSSON, 1926a.
" <i>Thapsus</i> L.	15 ¹⁾		" "
Section (?)			
<i>Verbascum montanum</i> SCHRAD	16		SCHMID, 1906.
" <i>pulverulentum</i> . . .	16		(PERINO) given by TISCHLER, 1916.
CELSIA ²⁾			
Section I. Aulacospermae			
<i>Celsia brevipedicellata</i> ENGL. .	23		HÅKANSSON, 1926a.
" <i>keniensis</i> MURB.	23		" "
Section II. Bothrospermae			
Subsection I. Nefflea			
<i>Celsia orientalis</i> L.	24		" "
Subsection II. Arcturus			
Grex I. Mesantherae			
<i>Celsia arcturus</i> (L.) BOUCHE .	24		" "
" <i>horizontalis</i> MOENCH. .	20		" "
" <i>roripifolia</i> HAL.	21,	42	" "
	possibly 20		
" <i>rupestris</i> DAVIDOFF . .	24		" "
Grex II. Macrantherae			
<i>Celsia Battandieri</i> MURB. . . .		46 or	" "
		possibly 48	" "
" <i>bugulifolia</i> (LAM.) J. and			
Sp. ³⁾	17		" "
" <i>cretica</i> L.	25		" "
" <i>Faurei</i> MURB.	23		" "
" <i>lyrata</i> (LAM.) G. DON. .	26		" "
" <i>maroccana</i> BALL.	25		" "
" <i>pontica</i> BOISS.		34	" "
Hybrids:			
<i>Verbascum austriacum</i> × <i>Cel-</i>			
<i>sia roripifolia</i> . . .	$16 + \frac{4_1}{2}$		" "
" <i>Blattaria</i> × <i>Celsia</i>			
<i>bugulifolia</i> . . .	$15 + 2_1^{4)}$		" "
	$\frac{2}{2}$		
" <i>Blattaria</i> × <i>Celsia</i>			
<i>maroccana</i> . . .	$15 + 10_1^{5)}$		" "
	$\frac{2}{2}$		

¹⁾ Often only 17 chromosomes were seen.²⁾ The following species are classified under sections according to MURBECK (1925).³⁾ Various races had the same chromosome number.⁴⁾ Yet the author says there were nearly always 6 to 8 univalents.⁵⁾ In the embryo-sac-mother cells there were 9 bivalents and 13 univalents.

SCHROPHULARIACEAE (continued) n		2n	
<i>Verbascum</i> (continued)			
<i>Verbascum „densiflorum”</i> (V.			
<i>phoeniceum</i> × V.			
<i>pyramidatum</i>)	16 ¹⁾		HÅKANSON 1926a.
<i>Calceolaria mexicana</i>	30		SUGIURA, 1928a.
<i>pinnata</i>		50—52	HEITZ, 1926.
<i>Nemesia affinis</i>		(18)	„ 1927b.
<i>barbata</i>		(18)	„ „
<i>bicornis</i>		18	„ „
<i>compacta</i>		13	„ 1927a, 1927b.
<i>floribunda</i>		18	„ 1927b.
<i>foetens</i>		18	„ „
<i>hybrida</i>		18	„ 1927a, b.
<i>lilacina</i>		18	„ 1927b.
<i>strumosa</i>	9	18	„ 1927a.
	9		„ 1927b.
<i>versicolor</i>		ca. 18	„ 1927b.
<i>spec.</i>		(18)	„ „
<i>Cymbalaria hepaticifolia</i>	> 20		„ „
<i>muralis</i>		14	„ 1926, 1927a, b.
<i>pallida</i>		14	„ 1927a.
	7		„ 1927b.
<i>Elatinoides commutata</i>	14—16		„ „
<i>spuria</i>	14—16		„ „
<i>Linaria alpina</i>		12	„ „
<i>amethystea</i>		12	„ 1926, 1927b.
<i>anticaria</i>		12	„ 1926, 1927b.
<i>aparinoides</i>		12	„ „
<i>aquilens</i>		12	„ „
<i>arvensis</i>		12	„ „
<i>bipartita</i>		12	„ 1926, 1927b.
<i>Broussonnetii</i>		12	„ 1927b.
<i>capraria</i>		12	„ 1927a, b.
<i>chalepensis</i>		24	„ „ b.
<i>dalmatica</i>		12	„ 1926, 1927b.
	6		TJEBBES, 1928.
<i>delphinoides</i>		12	HEITZ, 1926, 1927b.
<i>genistifolia</i>		12	„ „ „
	6		TJEBBES, 1928.
<i>Hendersonii</i>		12	HEITZ, 1926, 1927b.
	6		TJEBBES, 1928.
<i>lincolata</i>		12	HEITZ, 1927b.
<i>macedonica</i>		12	„ 1926.

¹⁾ Either there were 16 bivalents, or 15 bivalents and 2 univalents, or 14 bivalents and 4 univalents.

SCROPHULARIACEAE (continued) n		2n	
<i>Linaria</i> (continued)			
<i>Linaria macroura</i>		12	HEITZ, 1926, 1927b.
" <i>maroccana</i>	6		" 1926, 1927a; TJEJBES, 1928.
" <i>maroccana</i>		12	HEITZ, 1927b.
" <i>melanantha</i>		12	" 1926, 1927b.
" <i>multipunctata</i>		12	" " "
" <i>Pancicii</i>		12+4	" 1927b.
" <i>Perezii</i>		12	" 1926, 1927a, b.
" <i>purpurea</i>		12	" 1926, 1927b.
" <i>reflexa</i>		12	" 1927a, b.
" <i>repens</i>	6		TJEJBES, 1928.
" <i>reticulata</i>		12	HEITZ, 1926, 1927b.
" <i>saxatilis</i>		12	" 1927b.
" <i>Sibthorpiana</i>		(12)	" "
" <i>spartea</i>		12	" "
" <i>striata</i>		12	" 1926, 1927b.
" <i>supina</i>		12	" 1927b.
" <i>triornithophora</i>		12	" 1926.
" <i>triphylla</i>	6		" 1927b.
" <i>tristis</i>	6		" 1926, 1927a.
" <i>versicolor</i>		12	" 1927b.
" <i>versicolor</i>		(12)	" 1927b.
" <i>vulgaris</i>		12	" 1926, 1927b.
	6		TJEJBES, 1928.
<i>Antirrhinum Asarina</i>		16-20	HEITZ, 1926.
" <i>Casabomela</i>		16	" 1927a.
" spec. <i>Casabomela</i>		16	" 1927b.
" <i>Cordoba</i>		16	" " "
" spec. <i>Cordoba</i>	8		TISCHLER, 1920.
" <i>glutinosum</i> (= <i>molle</i>)		16	HEITZ, 1927b.
" <i>molle</i>	8		OSTENFELD, 1928.
" <i>hispanicum</i>	8		TISCHLER, 1920.
" <i>Huetii</i> (= <i>sempervirens</i>)		16	HEITZ, 1927a.
" <i>sempervirens</i>		16	" 1927b.
" <i>latifolium</i>	8		TISCHLER, 1921-22.
" <i>majus</i>	8		TISCHLER, 1920; BAUR, 1924; OSTENFELD, 1928; SALESCU, 1925.
		16	HEITZ, 1926, 1927b.
	8	16	TISCHLER, 1921-22.

SCROPHULARIACEAE (continued) n		2n	
<i>Antirrhinum</i> (continued)			
<i>Antirrhinum majus</i>	3 ¹⁾	16 ²⁾	STEIN, 1926.
„ <i>majus</i> (LÖWEN- MAUL)	3 ³⁾	16 ⁴⁾	STEIN, 1927.
„ <i>majus</i> L. var.	3		DE VILMORIN & SIMONET, 1927b
„ <i>orontium</i>		16	HEITZ, 1926, 1927b.
„ <i>spec. Segovia</i>		16	„ 1927b.
„ <i>siculum</i>		16	„ 1927a, b.
„ <i>tortuosum</i>		16	„ 1927a, b.
<i>Asarina procumbens</i>		13	HEITZ, 1927a, b.
<i>Chaenorrhinum littorale</i>		(14)	„ 1927b.
„ <i>organifolium</i>	7		„ 1927a, b.
„ <i>viscidum</i>		14	„ „ b.
<i>Anarrhinum bellidifolium</i>		18	„ 1927b.
„ <i>laxiflorum</i>		13	„ 1927a, b.
<i>Maurandia antirrhiniiflora</i>	12		„ 1927a.
		24	„ 1927b.
„ <i>Barclayana</i>		24	„ „
„ <i>Emeryana</i>		24	„ „
„ <i>erubescens</i>		(24)	„ „
„ <i>Purpusi</i>		24	„ „
„ <i>scandens</i> (= <i>Lophospermum scandens</i> DON.)	12		„ 1927a.
„ <i>scandens</i>		24	„ 1927b.
<i>Scrophularia vernalis</i>	20		HÅKANSSON, 1926b.
<i>Penstemon confertus</i>		ca. 16	HEITZ, 1927b.
„ <i>deustus</i>		16	„ „
„ <i>diffusus</i>	3		WINGE, 1925.
		14/16	HEITZ, 1927b.
„ <i>Hartwegii hybridus</i> <i>grandiflorus</i>	8		WINGE, 1925
„ <i>Hartwegii</i> BENTH. var. hort. <i>gloxinoides</i>	8		DE VILMORIN & SIMONET, 1927b
„ <i>heterophyllus</i>		ca. 16	HEITZ, 1927b.
„ <i>isophyllus</i>	3		WINGE, 1925.
		ca. 16	HEITZ, 1927b.

¹⁾ A number of irregularities in the division of the chromosomes in the pollen mother cells were observed in plants treated by radium.

²⁾ No irregularities in somatic divisions were found in radium-treated plants.

³⁾ In some of the forms resulting from radium treatment (as SH. Pf 1. = schmalblättrigen Hornchenpflanzen and FD. Pfl. = Farb und Form defekten Pflanzen) non-disjunction caused 7—9 chromosomes to be seen in the daughter chromosomes.

⁴⁾ No irregularities were found in the somatic divisions.

SCROPHULARIACEAE (continued) n		2n	
<i>Penstemon</i> (continued)			
<i>Penstemon unilateralis</i>		14-16	HEITZ, 1927b.
" <i>venustus</i>		14-16	" "
" <i>Watsonii</i>		(14)-16	" "
<i>Limosella aquatica</i> L.	18		SVENSSON, 1923.
VERONICA ¹⁾			
Section <i>Veronicastrum</i>			
<i>Veronica fruticans</i>	8		HUBER, 1927.
" <i>gentianoides</i>	24		" "
" <i>Gouani</i>	16(?) ²⁾		" "
Section <i>Alsinebe</i>			
<i>Veronica polita</i>	7		" "
" <i>Tournefortii</i>	14	25-28	" "
Section <i>Pseudolysimachia</i>			
<i>Veronica longifolia</i>		64-68	" "
" <i>spicata</i>	32(?)		" "
Section <i>Chamaedrys</i>			
<i>Veronica officinalis</i>	+16(?)	32-37	HUBER, 1927.
" <i>prostrata</i>	16		" "
Section <i>Beccabunga</i>			
<i>Veronica beccabunga</i>	9	18	" "
Section <i>Leptandra</i>			
<i>Veronica virginica</i>	17 ³⁾	ca. 33	" "
Section <i>Hebe</i>			
<i>Veronica diosmifolia</i>	+12	24	" "
Section (?)			
<i>Veronica Andersoni</i> HORT.	20		DE VILMORIN & SIMONET, 1927b
" <i>arvensis</i>		16-(18)	HEITZ, 1926.
" <i>azurca</i>		ca. 48	" "
" <i>opaca</i>		24-28	" "
" <i>speciosa</i> CUNN. var.			
<i>hort. Autumn Glory</i>	20		DE VILMORIN & SIMONET, 1927b.
" spec. var. <i>hort. Scarlet Gem</i>	20		DE VILMORIN & SIMONET, 1927b.
<i>Digitalis ambigua</i>	24	48	HAASE-BESSELL, 1921.
"	28	56	HUSKINS, 1928b.
" <i>ambigua</i> MURR.	23	56	BUXTON & NEWTON, 1928.
" <i>gloxiniæflora</i>	12-13		WARREN, 1924.
" <i>lanata</i>	24	48	HAASE-BESSELL, 1921.
" <i>lutea</i>	48	96	" " 1916; 1921.

¹⁾ The following species are classified under sections according to ENGLER & PRANTL.

²⁾ As many as 18 chromosomes were found.

³⁾ 16 and 18 chromosomes were also found.

SCROPHULARIACEAE (continued) n		2n	
VERONICA (continued)			
	8		WARREN, 1924.
	48		HAASE-BESSELL, 1926.
<i>Digitalis micrantha</i>	24	48	" " 1921.
	24		" " 1926.
" <i>purpurea</i>	24	48	" " 1916; 1921.
	28	56	HUSKINS, 1928b.
" <i>purpurea</i> L.	28	56	BUXTON & NEWTON, 1928.
" <i>viridiflora</i>	28	56	HUSKINS, 1928b; BUXTON & NEWTON, 1928
" <i>ambigua</i> × <i>D. purpurea</i>	56	112	HUSKINS, 1928b.
" <i>lanata</i> × <i>D. lutea</i> . .	72 ₁		HAASE-BESSELL, 1921.
	2		
" <i>lanata</i> × <i>D. micrantha</i>	24		" " "
" <i>lutea</i> × <i>D. lanata</i> . .	72 ₁		" " "
	2		
" <i>lutea</i> × <i>D. micrantha</i>	36		" " " 1926.
" <i>lutea</i> × <i>gloxiniaeflora</i>	10-11		WARREN, 1924.
(, <i>lutea</i> × <i>gloxiniaeflora</i>)			
× <i>Digitalis gloxiniae</i>			
<i>flora</i>	11-12		" "
(, <i>lutea</i> × <i>gloxiniaeflora</i>)			
× <i>Digitalis lutea</i> . .	8-9		" "
" <i>purpurea</i> × <i>D. ambigua</i>	24		HAASE-BESSELL, 1921.
" <i>purpurea</i> × <i>ambigua</i>			
F ₁	28 ¹⁾	56	BUXTON & NEWTON, 1928.
" <i>purpurea</i> × <i>ambigua</i>			
F ₂ ²⁾		111-112 ³⁾	" " " "
" <i>purpurea</i> × <i>ambigua</i>			
F ₃		84	" " " "
" <i>purpurea</i> × <i>lutea</i> . .	72 ₁	72	HAASE-BESSELL, 1916.
	2		
<i>Lathraea clandestina</i>	21		GATES & LATTER, 1927.
" <i>squamaria</i>	21		" " " "
BIGNONIACEAE			
<i>Bignonia venusta</i>	ca. 25		DUGGAR, 1899.
<i>Tecoma Tagliabuana</i> Vis. . . .	20		DE VILMORIN & SIMONET, 1927b

¹⁾ The number of bivalents appearing in diakinesis was 5—12. The first meiotic division was extremely irregular, frequently all the chromosomes being drawn into a single "restitution" nucleus.

²⁾ These hybrids resulted from artificial self-fertilization.

³⁾ In one case there were only 102 chromosomes.

⁴⁾ These hybrids resulted from natural pollination.

OROBANCHACEAE

Orobanche minor 19 38 CARTER, 1923.

GESNERIACEAE

Ramondia nathaliae PANC. et

PETR. 18 GLISIC, 1924¹⁾.

" *serbica* PANC. 36 " "

Monophyllaea Horsfieldii 16 32 OELKERS, 1922.

Tydaea refulgens 24-28 HEITZ, 1926.

LENTIBULARIACEAE

n

2n

Pinguicula caudata 44 HEITZ, 1926.

" *vulgaris* ca. 50 ROSENBERG, 1909c.

PLANTAGINALES

PLANTAGINACEAE

Plantago acanthophylla (10)-12) HEITZ, 1927b²⁾:

" *albicans* 12 " "

" *alpina* 24 " "

" *amplexicaule* 10 " "

" *arenaria* (12) " "

" *aristata* (20) " "

" *Bellardii* 10 " "

" *cantschatica* (= *major*). 12 " "

" *Candollei* (12) " "

" *cornuti* 12 " "

" *coronopifolia* (12) " "

" *depressa* 12 EKSTRAND, 1918.

" *indica* (= *pumila*?) 12 HEITZ, 1927b.

" *insularis* (10)-12 " "

" *japonica* 12 SINOTO, 1925.

" *Lagopus* 12 HEITZ, 1927b.

" *lanceolata* 12 NĚMEC, 1910.

" *lanceolata* L.³⁾ 6 TJEJBES, 1928.

" *lusitanica*. 12 HEITZ, 1927b.

" *maior* 6 EKSTRAND, 1918.

" *major* L. 6⁴⁾? LEVITSKY, 1928.

" *major* var. *asiatica* . ca. 12 (MIYAJI) given by ISHIKAWA, 1916.

12 24 SINOTO, 1925.

" *major* var. *asiatica* f.

¹⁾ According to SCHÜRHOFF, 1926.

²⁾ Though HEITZ gives the haploid numbers as half of the above numbers (diploid), I have chosen to give these, since his figures are all of somatic cells showing the diploid chromosome sets.

³⁾ Though several forms were investigated, no variation was found.

⁴⁾ By applying wound stimuli to the anthers of *Plantago major* L. in the stage of reduction division, the number of chromosomes was decreased in some cells and increased in others.

PLANTAGINACEAE (continued)		n	2n	
<i>Plantago</i> (continued)				
	<i>contracta</i>		24	(MIYAJI) given by ISHIKAWA, 1916.
	<i>Plantago maritima</i>	6	12	EKSTRAND, 1918.
	„ <i>maxima</i>		12	HEITZ, 1927b.
	„ <i>montana</i>		12	„ „
	„ <i>ovata</i>		8	„ „
	„ <i>palmata</i>		20-24	„ „
	„ <i>psyllium</i>	6		EKSTRAND, 1918.
			(12-14)	HEITZ, 1927b.
	„ <i>saxatilis</i>		12	„ „
	„ <i>Schwartzenbergiana</i>		12	„ „
	„ <i>sericea</i>		12-14	„ „
	„ <i>sarraria</i>		10-12	„ „
	„ <i>suffruticosa</i>		12	EKSTRAND, 1918.
	„ <i>tibetica</i>		12	HEITZ, 1927b.
	„ <i>virginica</i>		12	„ „

RUBIALES

RUBIACEAE

<i>Houstonia caerulea</i>	16		STEVENS, 1912.
<i>Coffea arabica</i>	8	16	VON FABER, 1912.
„ <i>liberica</i>	8	16	„ „ „
<i>Crucianella gilanica</i>	10		LLOYD, 1902.
„ <i>macrostachya</i>	10		„ „
<i>Asperula cynanchia</i>	12		„ „

CAPRIFOLIACEAE

<i>Sambucus nigra</i> L.	18		VON BOENICKE, 1911.
„ <i>nigra</i>	18		KLEINMAN, 1923.
„ <i>nigra</i> var. <i>aurea</i>	18		WINGE, 1917.
„ <i>nigra</i> var. <i>linearis</i>	18		„ „
„ <i>racemosa</i>	18		LAGERBERG, 1909.
„ <i>alseuosmoides</i> GRAEB.	18		DE VILMORIN & SIMONET, 1927b
„ <i>stabiana</i> GUSS.	9		„ „ „ „

ADOXACEAE

<i>Adoxa moschatellina</i> L.	18	36	LAGERBERG, 1909.
---------------------------------------	----	----	------------------

VALERIANACEAE

<i>Patrinia rupestris</i>	11		ASPLUND, 1920.
-------------------------------------	----	--	----------------

VALERIANA ¹⁾

Section Exaltatae

<i>Valeriana exaltata</i> MIK.	14 ²⁾		SENJANINOVA, 1927.
--	------------------	--	--------------------

Section Dubiae

<i>Valeriana rossica</i> P. SMIRN.	28 ²⁾		SENJANINOVA, 1927.
--	------------------	--	--------------------

¹⁾ These sections („Zyklus“) are according to SMIRNOV, 1927.

²⁾ Two chromosomes possessed satellites.

VALERIANACEAE (continued)		
Section <i>Sambucifoliae</i>		
<i>Valeriana excelsa</i> POIR . . .	n	2n
" <i>Wolgensis</i> L. KAZA- KEWITSCH		56 ¹⁾ SENJANINOVA, 1927 28 ²⁾ " "
Section (?)		
<i>Valeriana dioica</i> L	8 ³⁾	MEURMAN, 1925a, b
" <i>montana</i>	16	ASPLUND, 1920.
" <i>officinalis</i> L.	14	MEURMAN, 1925a, b.
" <i>officinalis</i>	32 ⁴⁾	ASPLUND, 1920.
" <i>officinalis</i> = <i>Valeri-</i> <i>na salina</i> PLEIJEL . . .	28	MEURMAN, 1925b.
" <i>phu</i>	24	ASPLUND, 1920.
" <i>salina</i> PLEIJEL . . .	28	" "
<i>Centranthus macrosiphon</i> . . .	16	" "
DIPSACACEAE		
<i>Morina longifolia</i>	16	RISSE, 1928.
<i>Cephalaria alpina</i>	8	" "
" <i>ambrosoides</i>	8	" "
" <i>leucantha</i>	8	" 1926, 1928.
" <i>tatarica</i>	8	" 1928.
" <i>transsilvanica</i> . . .	8	" "
<i>Dipsacus fullonum</i> ,	8	" "
" <i>laciniatus</i>	8	" "
" <i>silvester</i>	8	" 1926, 1928.
<i>Succisa australis</i>	8	" "
" <i>pratensis</i>	8	" "
<i>Knautia arvensis</i>	8	" " 1928.
" <i>atro-rubens</i>	8	" 1928.
" <i>hybrida</i>	8	" "
" <i>magnifica</i>	8	CHIARUGI, 1927c.
" <i>orientalis</i>	8	RISSE 1928.
" <i>silvatica</i>	8	" 1926, 1928.
" <i>silvatica</i> var. <i>dipsaci-</i> <i>folia</i>	24	CHIARUGI, 1927c.
<i>Scabiosa acrantha</i>	8	RISSE, 1926.
" <i>atropurpurea</i>	8	" " 1928.
" <i>caucasia</i>	8	" 1928.
" <i>Columbaria</i>	8	" 1926, 1928.

¹⁾ Satellites could not be discovered.

²⁾ Two chromosomes possessed satellites.

³⁾ A pair of heterochromosomes was found: $3n = 7 + x$ or $7 + Y$.

⁴⁾ MEURMAN (1925b) reexamined some of ASPLUND's material and found 28 to be the correct number. He considered it probable that of the two forms of *Valeriana officinalis* L. ASPLUND had fixed plants identical with the coastal form held by PLEIJEL (1925) to be an independent form *Valeriana salina* PLEIJEL.

DIPSACACEAE (continued)

Scabiosa (continued)

	n	2n
<i>Scabiosa daucoides</i>	8	RISSE, 1926, 1928.
" <i>gramuntia</i>	8	" 1928.
" <i>japonica</i>	8	TAHARA, 1915, given by ISHI-KAWA 1916.
" <i>maritima</i>	8	RISSE, 1926, 1928.
" <i>micrantha</i>	8	" " "
" <i>ochroleuca</i>	8	" 1928.
" <i>prolifera</i> (?)	8(?)	" 1926.
"	8	" 1928.
" <i>stellata</i>	8	" 1926, 1928.

CUCURBITALES

CUCURBITACEAE

<i>Bryonia alba</i> L.	10	VON BOENICKE, 1911; MEURMAN, 1925b.
" <i>dioica</i>	10	STRASBURGER, 1910c.
" <i>dioica</i> JACQ.	12	MEURMAN, 1925b.
" <i>alba</i> × <i>B. dioica</i>	12	TISCHLER, 1906.
<i>Citrullus vulgaris</i> L. ¹⁾	22	KOZHUKHOW, 1925.
<i>Cucumis maxima</i> DUCH.	48	" "
" <i>melo</i> L. var. <i>reticulatus</i> ALEF.	24	" "
" <i>moschata</i> DUCH.	48	" "
" <i>pepo</i> L. var. <i>pomiformis</i> var. <i>aurantia</i> ALEF.	40	" "
" <i>pepo</i> L. var. <i>gr. citrullina</i> ALEF.	42	" "
" <i>sativus</i> L. ²⁾	14	" "
" <i>sativus</i> L. ³⁾	7	14 HEINLICH, 1927.
" <i>sativus</i> L. var. <i>Selenka</i>	14 ⁴⁾	KOSHUCHOW, 1927, 1928.
<i>Trichosanthes japonica</i> REGEL.	11 ⁵⁾	SINÔTO, 1928a.
<i>Cucurbita maxima</i>	20	CASTETTER, 1926.
" <i>pepo</i> ⁶⁾	14	LUNDEGARDH, 1914b.
<i>Micrampelis lobata</i> (MICHX.) GREENE	16	KIRKWOOD, 1907.
CAMPANULACEAE		
<i>Symphyandra Hofmanni</i> PANT.	17	DEVILMORIN & SIMONET, 1927b.

¹⁾ Cells showing 44 chromosomes (syndiploid) were found.²⁾ „Syndiploid” cells with 28 chromosomes, arranged in pairs, were found.³⁾ This was a white-spined variety.⁴⁾ Tetraploid and octoploid numbers were found as a result of treatment of seedlings by higher and lower temperatures than the optimal for germination.⁵⁾ A pair of unequal chromosomes was distinguishable.⁶⁾ FLACH (1924) found 27—32 prochromosomes in *Cucurbita pepo*.

CAMPANULACEAE (continued)	n	2n	
<i>Campanula isophylla</i> MORETTI.	16		DEVILMORIN & SIMONET, 1927b
„ <i>latifolia</i> L. var.			
„ <i>grandiflora</i> HORT.	17		„ „ „ „
„ <i>longistyla</i> FOMINE .	17		„ „ „ „
„ <i>nitida</i>	8	16	GAIRDNER, 1926.
„ <i>persicifolia</i>	8		MARCHAL, 1920.
	8	16	GAIRDNER, 1926.
„ <i>persicifolia</i> („Telham Beauty”) . .	16	32	„ „
„ <i>punctata</i> LAM. . .	17		DEVILMORIN & SIMONET, 1927b.
„ <i>pyraversi</i> HORT. CA YEUX.	17		„ „ „ „
„ <i>rapunculoides</i> L. var. <i>grandiflora</i> HORT.	51		„ „ „ „
„ <i>Van Houttei</i> CARR.	17		„ „ „ „
„ <i>nitida</i> × <i>C. persicifolia</i> („Telham Beauty”)		24	GAIRDNER, 1926.
„ <i>persicifolia</i> „Telham Beauty” × <i>C. nitida</i>		24 ¹⁾	„ „
„ <i>persicifolia</i> „Telham Beauty” × <i>C. persicifolia</i> . . .		24-25 ²⁾	
<i>Phyteuma spicata</i>	18		ARMAND, 1912.
<i>Lobelia cardinalis</i> L.	7		DEVILMORIN & SIMONET, 1927b.
„ <i>cliffortiana</i> L.	7		„ „ „ „
„ <i>Dortmanna</i>	8		ARMAND, 1912.
„ <i>Erinus</i>	8		„ „
„ <i>Erinus</i> L. HORT. . . .	14		DEVILMORIN & SIMONET, 1927b.
„ <i>Erinus</i> L. var. <i>Crystal-Palace</i> HORT.	21		„ „ „ „
„ <i>Erinus</i> L. var. <i>Lindleyana</i> HORT.	14		„ „ „ „
„ <i>Erinus</i> L. var. <i>saphir pendula</i> HORT. . .	21		„ „ „ „
„ <i>Erinus</i> L. var. <i>speciosa grandiflora</i> HORT. . .	21		„ „ „ „
„ <i>Erinus</i> L. var. <i>superba</i> HORT.	21		„ „ „ „
„ <i>syphilitica</i> L.	7		„ „ „ „
„ <i>Tupa</i> L.	21		„ „ „ „

¹⁾ Two other plants had (28—30)? and (16)? chromosomes, respectively.

²⁾ One plant had 32 chromosomes.

CAMPANULACEAE (continued)		n	2n	
<i>Lobelia</i> (continued)				
<i>Lobelia urens</i>	8			ARMAND, 1912.
" <i>urens</i> L.	7			DEVILMORIN & SIMONET, 1927b.
CALYCERACEAE				
<i>Acicarpa tribuloides</i> Juss. . ca.	8			DAHLGREN, 1915.
COMPOSITAE				
<i>Ageratum conyzoides</i>	10			ISHIKAWA, 1911b, 1916.
<i>Eupatorium ageratoides</i>	17			HOLMGREN, 1919.
" <i>cannabinum</i>	10			" "
" <i>glandulosum</i>	51	51		" "
	$\frac{2}{2}$			
" <i>ianthinum</i>	10			" "
" <i>petiolatum</i>	ca. 17			" "
" <i>Purpusi</i>	17			" "
<i>Grindelia squarrosa</i>	6	12		HOWE, 1926.
<i>Solidago canadensis</i>	9			CARANO, 1921.
" <i>Riddellii</i>	18			" "
<i>Bellis perennis</i>	9			ISHIKAWA, 1911b, 1916; WINGE, 1917.
		18		HEITZ, 1926.
<i>Asteromoea indica</i>	9			TAHARA & SHIMOTOMAI, 1926.
" <i>indica</i> var. <i>Pinna-</i>				
<i>tifidus</i>	9			" " " "
" <i>Savatieri</i>	9			" " " "
<i>Callistephus chinensis</i>	9			" " " "
<i>Aster fastigiatus</i>	9			" " " "
" <i>Glehni</i>	9			" " " "
" <i>novae angliae</i>	5			CARANO, 1921.
" <i>scaber</i>	9			TAHARA & SHIMOTOMAI, 1926.
" <i>tartaricus</i>	27			" " " "
" <i>trinervius</i> var. <i>adustus</i> . .	18			" " " "
" <i>trinervius</i> var. <i>genuinus</i> .	18			" " " "
" <i>Tripolium</i>	9			" " " "
" <i>viscidulus</i>	9			" " " "
<i>Melitella pusilla</i>	4			CHIARUGI, 1926b.
" <i>pusilla</i> SOMM.	5			" 1927a.
<i>Erigeron alpinus</i> L.	9			" 1926b, 1927a.
" <i>annuus</i> PERS.	13	26		TAHARA, 1915d.
" <i>annuus</i> PERS.		26 ¹⁾		" 1921.
" cfr. <i>annuus</i>	4 + 19 ₁	27		HOLMGREN, 1919.
	$\frac{2}{2}$			
" <i>bonariensis</i>	27			HOLMGREN, 1919.
" <i>dubius</i> MAKINO	9			TAHARA, 1921.

¹⁾ In the endosperm cells 52 chromosomes were found.

COMPOSITAE	n	2n	
<i>Erigeron</i> (continued)			
<i>Erigeron dubius</i> var. <i>glabrata</i>	9		(TAHARA, 1916), given by ISH- IKAWA, 1916.
„ <i>eriocephalus</i>	9		HOLMGREN, 1919.
„ <i>glabellus</i>	9		„ „ CARANO 1921
„ <i>Karvinskianus</i> var.			
<i>mucronatus</i>	14-18	32-34	CARANO, 1921.
	ca. 16	32-34	„ 1924.
„ <i>linifolius</i> probably			
	27		HOLMGREN, 1919.
„ <i>linifolius</i> WILD.	26	ca. 52	TAHARA, 1921.
„ <i>macranthus</i>	13-15		HOLMGREN, 1919.
„ <i>politus</i>	9		„ „
„ <i>unalaschkensis</i>	18		„ „
<i>Antennaria alpina</i>		48-52	JUEL, 1900a.
„ <i>dioica</i>	12-14	24-28	„ „
	13		HOLMGREN, 1919.
<i>Silphium integrifolium</i> MICHX.	8		MERRELL, 1900.
		ca. 16	LAND, 1900.
„ <i>laciniatum</i> L.		ca. 16	„ „
„ <i>perfoliatum</i> L.		14	TAYLOR, 1926.
„ <i>terebinthinaceum</i> L.		ca. 16	LAND, 1900.
<i>Xanthium inflexum</i>	18		SYMONS, 1926.
„ <i>italicum</i>	18		„ „
„ <i>pennsylvanicum</i>	18		„ „
„ <i>strumarium</i>	18		ISHIKAWA, 1916.
„ <i>inflexum</i> × <i>X. ita-</i>			
<i>licum</i>	18		SYMONS, 1926
<i>Zinnia elegans</i>	12		ISHIKAWA, 1911b, 1916.
<i>Wedelia prostrata</i>	15		„ 1916.
<i>Helianthus annuus</i> L.	16(?)		VON BOENICKE, 1911.
„ <i>annuus</i>		34	TAHARA, 1915a.
		34 ¹⁾	PROZINA, 1925.
<i>Dahlia coronata</i> „ <i>Coronata</i> ”	16		ISHIKAWA, 1911a.
„ <i>coronata</i>	16		„ 1911b.
		32	„ 1916.
„ <i>gracilis</i> (?) „ <i>Camelia</i> ”	32		„ 1911a.
„ <i>imperialis</i>	16		BELLING, 1925d.
„ <i>juarezii</i> „ <i>Juarezii</i> ”	32		ISHIKAWA, 1911a.
„ (?) „ <i>Citronen Vogel</i> ”	32		„ „
„ (?) „ <i>Collette</i> ”	32		„ „
„ (?) „ <i>Gloria</i> ”	32		„ „
„ (?) „ <i>Hanza</i> ”	32		„ „

¹⁾ One pair of chromosomes was provided with small satellites.

COMPOSITAE (continued)	n	2n	
<i>Dahlia</i> (continued)			
<i>Dahlia</i> (?) „ <i>Leopold</i> ”	32		ISHIKAWA, 1911a.
„ (?) „ <i>Oertel</i> ”	32		„ „
„ (some single dahlias)	32		„ „
„ (vars.)	32		„ 1911b.
„ (vars.) (believed to be from <i>D. variabilis</i> and <i>D. coccinea</i>	32		„ 1916.
<i>Hemizonia congesta</i> subspecies			
<i>lutescens</i>	12	24	BABCOCK & HALL, 1924.
„ <i>congesta</i> subspecies			
<i>luzulaefolia</i>	12	24	„ „ „ „
„ <i>congesta</i> subspecies			
<i>typica</i>	12	24	„ „ „ „
„ <i>corymbosa</i> (D.C.) T. & G.	10	20	„ „ „ „
<i>Anthemis alpina</i> L.	9		CHIARUGI, 1926b, 1279a.
„ <i>tinctoria</i>	9		LUNDEGARDH, 1909; HOLM-GREN, 1915.
<i>Anacyclus pyrethrum</i> DC.		18	RAVES, 1926.
<i>Achillea Clavenae</i>	9		CHIARUGI, 1927a.
„ <i>millefolium</i>	ca. 24		LUNDEGARDH, 1909.
<i>Matricaria ambigua</i>	9		(TAHARA 1916) given by ISHI-KAWA, 1916.
„ <i>ambigua</i> LEDEB.	9		TAHARA, 1921.
„ <i>chamomilla</i>	9		LUNDEGARDH, 1909; BEER, 1912.
<i>Chrysanthemum alpinum</i> L.	18		CHIARUGI, 1926b.
„	18	36	„ 1927a, 1927b.
„ <i>arcticum</i>	45		TAHARA, 1915b.
„ <i>arcticum</i> L.	45		„ 1915c, 1921.
„ <i>carinatum</i>	9		„ 1914, 1915b.
„ <i>carinatum</i> SCHOUB.	9		„ 1915c, 1921.
„ <i>cinerariifolium</i> BROCC.	9		„ 1921
„ <i>coronarium</i>	9		„ 1914, 1915b.
„ <i>coronarium</i> L.	9		„ 1915c, 1921.
„ <i>Decaisneanum</i>	36		„ 1915b.
„ <i>Decaisneanum</i> MATSUM.	36(?)		„ 1915c.
„	36		„ 1921.
„ <i>hakusanense</i>	27		(TAHARA 1916), given by ISHI-KAWA, 1916.

COMPOSITAE (continued)	n	2n
<i>Chrysanthemum</i> (continued)		
<i>Chrysanthemum hakusanense</i>		
MAK.	27	TAHARA, 1921.
" <i>indicum</i>	18	(TAHARA 1916) given by ISHI-KAWA, 1916.
" <i>indicum</i> L. . . .	18	TAHARA, 1921
" <i>japonicum</i>	9	" 1914, 1915b.
" <i>japonicum</i>		
MAK.	9	TAHARA, 1915c, 1921.
" <i>lavandulaefolium</i>		
um	9	" 1914, 1915b; TAHARA & SHIMOTOMAI, 1927.
" <i>lavandulaefolium</i>		
um MAK.	9	TAHARA, 1915c, 1921.
" <i>Leucanthemum</i>	18	" 1915b.
" <i>Leucanthemum</i>		
L.	18	" 1915c, 1921.
" <i>lineare</i>	9	(1916) given by ISHI-KAWA, 1916.
" <i>lineare</i> MAT-		
SUM.	9	TAHARA, 1921.
" <i>marginatum</i>	45	(TAHARA, 1916) given by ISHI-KAWA, 1916, TAHARA & SHIMOTOMAI, 1927.
" <i>marginatum</i>		
MIQ.	45	TAHARA, 1921.
" <i>Marchalii</i>		
ASCHERS.	9	TAHARA, 1915c.
" <i>Marschallii</i>	9	" 1915b.
" <i>moritolum</i>	27	" "
" <i>morifolium</i>		
RAM.	27	" 1915c, 1921.
" <i>myconis</i>	9	(TAHARA 1916) given by ISHI-KAWA, 1916.
" <i>myconis</i> L.	9	TAHARA, 1921.
" <i>nipponicum</i>	9	" 1914, 1915b.
" <i>nipponicum</i>		
FRANCH.	9	" 1915c, 1921.
" <i>roseum</i>	9	" 1914.
" <i>roseum</i> WEBB.		
et MOHR.	9	" 1921.
" <i>segetum</i>	9	(TAHARA 1916) given by ISHI-KAWA, 1916.
" <i>segetum</i> L.	9	TAHARA, 1921.

COMPOSITAE (continued)	n	2n	
<i>Chrysanthemum</i> (continued)			
<i>Chrysanthemum hybridum</i>			
Hort. Jap.	27		TAHARA, 1921.
" <i>hybridum</i>			
„Shasta Daisy”	$45 + \frac{40_1}{2}$		„ „
" <i>marginatum</i> ×			
<i>C. lavandulaefolium</i>			
<i>lium</i>	36	72	TAHARA & SHIMOTOMAI, 1927.
<i>Tanacetum vulgare</i>	9		ROSENBERG, 1905.
<i>Centipeda orbicularis</i>	10		ISHIKAWA, 1911b, 1916.
<i>Artemisia absinthium</i>	9		WEINEDL-LIEBAU, 1928.
" <i>annua</i>	9		„ „ „
" <i>campestris</i>	9		„ „ „
" <i>cina</i>	9		„ „ „
" <i>dracunculus</i>	9		„ „ „
" <i>maritima</i>	9		„ „ „
" <i>nitida</i> BERTOL.		27	CHIARUGI, 1926a.
" <i>pontica</i>	9		WEINEDL-LIEBAU, 1928.
" <i>vulgaris</i>	9		„ „ „
<i>Senecio nikoensis</i>	10		ISHIKAWA, 1916.
<i>Ligularia tussilaginea</i>	30		MIYAJI, 1913.
" <i>tussilaginea</i> var. <i>crispata</i>	30, 31		„ „
<i>Calendula officinalis</i>		24	LUNDEGARDH, 1909.
" spec.	16	32	ROSENBERG, 1907b.
<i>Echinops sphaerocephalus</i> L.	16		PODDUBNAJA, 1927.
<i>Carduus crispus</i> L.	8		„ „
<i>Saussurea affinis</i>	18		ISHIKAWA, 1911b, 1916.
<i>Centaurea cyanus</i> L.	12		PODDUBNAJA, 1927.
<i>Lampsana apogonoides</i>	22		ISHIKAWA, 1911b, 1916.
" <i>humilis</i>	8		ISHIKAWA, 1916.
<i>Picris hieracioides</i>	5		ISHIKAWA, 1911b, 1916.
<i>Helminthia echinoides</i>	4		MARCHAL, 1920.
CREPIS ¹⁾			
Section <i>Anisoderis</i> Cass.			
<i>Crepis alpina</i>	4		MARCHAL, 1920.
		10	ROSENBERG, 1920; MANN, 1922; NAWASCHIN, M., 1925a, 1927a, d, e.
" <i>alpina</i> L.	5	10	MANN, 1925.
	5		BABCOCK & LESLEY, 1926.

¹⁾ The arrangement under sections is as BABCOCK & LESLEY (1926) have rearranged that of HOFFMANN in ENGLER and PRANTL.

COMPOSITE (continued)	n	2n	
<i>Crepis</i> (continued)			
<i>Crepis foetida</i>	4	8	ROSENBERG, 1918.
	4		MARCHAL, 1920.
		10	MANN, 1922.
	5		LESLEY, M. 1925.
" <i>foetida</i> L.	5		BABCOCK & LESLEY, 1926.
" <i>rubra</i>	5	10	ROSENBERG, 1918.
	4		MARCHAL, 1920.
		10	MANN, 1922; NAWASCHIN, M., 1925a.
" <i>rubra</i> L.	5		BABCOCK & LESLEY, 1926.
Section <i>Barkhausia</i> MNCH.			
<i>Crepis bursifolia</i>		8	MANN, 1922.
" <i>bursifolia</i> L.	4	8	" " 1925.
	4		BABCOCK & LESLEY, 1926.
" <i>setosa</i>		8	MANN, 1922.
" <i>setosa</i> HALL.		8	TAYLOR, 1925c.
	4	8	MANN, 1925.
	4		COLLINS & MANN, 1923; LES- LEY & HALL, 1926.
" <i>taraxacifolia</i>	6	12	BEER, 1912.
	4	8	DIGBY, 1914.
		8	MANN, 1922.
" <i>taraxacifolia</i> THUILL.	4	8	" 1925.
	4		BABCOCK & LESLEY, 1926.
Section <i>Nemauchenes</i> CASS.			
<i>Crepis aspera</i>	4		MARCHAL, 1920.
		8	MANN, 1922; NAWASCHIN, M., 1927c.
" <i>aspera</i> L.	4	8	MANN, 1925.
	4		BABCOCK & LESLEY, 1926.
" <i>amplexifolia</i>		8	MANN, 1922.
" <i>amplexifolia</i> WILLK.	4	8	" 1925.
" <i>amplexifolia</i> (GODR.) WILLK.	4		BABCOCK & LESLEY, 1926.
Section <i>Gaytonia</i> , <i>Cymboseris</i> BOISS. & <i>Phae- casium</i> BOISS.			
<i>Crepis dioscoridis</i>	4		MARCHAL, 1920.
		8	MANN, 1922.
" <i>dioscoridis</i> L.	4	8	" 1925.
		8 ¹⁾	NAWASCHIN, M., 1925a, 1926.
	4		BABCOCK & LESLEY, 1926.

¹⁾ One pair of chromosomes (D) had satellites (NAWASCHIN, M., 1926).

COMPOSITAE (continued)	n	2n	
<i>Crepis</i> (continued)			
„ <i>palaestina</i> Boiss.	4	8	MANN, 1925.
„ <i>palaestina</i> (BORNH.) . . .	4		BABCOCK & LESLEY, 1926.
„ <i>pulchra</i>	4	8	ROSENBERG, 1918.
		8	ROSENBERG, 1920; MANN, 1922
„ <i>pulchra</i> L.	4	8	MANN, 1925.
	4		BABCOCK & LESLEY, 1926.
Section <i>Eucrepis</i> D.C.			
<i>Crepis virens</i>	3	6	ROSENBERG, 1909a, 1918; BEER 1912; DIGBY, 1914; MAR- CHAL, 1920.
		6	GRÉGOIRE, 1912.
	3		DE SMET, 1914.
„ <i>virens</i> L.		6	DE LITARDIÈRE, 1923a; NAWA- SCHIN, M., 1925a.
„ <i>virens</i> f. <i>agrestis</i> W. K. .	3		DAHLGREN, 1920.
„ <i>capillaris</i>		6 ¹⁾	BABCOCK & COLLINS, 1920a; MANN, 1922; NAWASCHIN, S., 1926; NAWASCHIN, M., 1927c.
		3 ²⁾	HOLLINGSHEAD, 1928b.
„ <i>capillaris</i> L. (.) WALLR. .		9, 15 ³⁾	NAWASCHIN, M., 1925b.
		6, 7, 9, 15 ⁴⁾	„ „ 1926.
		6	TAYLOR, 1925c, 1926.
	3		BABCOCK & COLLINS, 1920b; COLLINS & MANN, 1923; BAB- COCK & LESLEY, 1926.
„ <i>neglecta</i>	4	8	ROSENBERG, 1918.
		8	MANN, 1922.
„ <i>neglecta</i> L.	4	8	„ 1925.
	4		BABCOCK & LESLEY, 1926.
„ <i>parviflora</i>	4	8	ROSENBERG, 1918.
		8	MANN, 1922; NAWASCHIN, M., 1925a.
„ <i>parviflora</i> DESF.	4	8	MANN, 1925.
	4		BABCOCK & LESLEY, 1926.

¹⁾ In 112 metaphases in root-tip cells, out of 768 examined, S. NAWASCHIN (1926) found association of homologous chromosomes.

²⁾ Two haploid plants appeared in F_1 of *C. capillaris* × *C. tectorum* after being subjected to low temperature. In the roots of one, diploid plates were found.

³⁾ Two mutants, one triploid ($2n = 9$), and one pentaploid ($2n = 15$), were found.

⁴⁾ Of 2,000 plants examined, 11 had $3n$, one had $5n$, and one had $2n + 1$ chromosomes. One cell of a root-tip had $128n$ (> 500) chromosomes. Also a tetraploid sector was found in a diploid root. In diploid cells, one pair of chromosomes (D) had satellites.

COMPOSITAE (continued)	n	2n	
<i>Crepis</i> (continued)			
<i>Crepis tectorum</i>	4	8	JUEL, 1905.
		8 ¹⁾	ROSENBERG, 1920; MANN, 1922; NAWASCHIN, M., 1925a, 1927a, d; NAWASCHIN, S., 1926.
„ <i>tectorum</i> L.	4	8	MANN, 1925.
	4		BABCOCK & COLLINS, 1920b; BABCOCK & LESLEY, 1926.
		8	BABCOCK & COLLINS, 1920a; NAWASCHIN, M., 1927e.
		6, 8+12, 16 ²⁾	NAWASCHIN, M., 1926.
„ <i>biennis</i>	20		ROSENBERG, 1918; MANN, 1922; LESLEY, 1925.
	21		ROSENBERG, 1920.
	16		MARCHAL, 1920.
„ <i>biennis</i> L.	20	40	MANN, 1925.
	20		COLLINS & MANN, 1923; BABCOCK & LESLEY, 1926.
„ <i>Blavii</i> ASCH.	4		BABCOCK & LESLEY, 1926.
„ <i>chondrilloides</i> JACQ. . .	4		„ „ „ „
„ <i>ciliata</i> C. KOCH	20		„ „ „ „
„ <i>lyrata</i> FROEL.	6		„ „ „ „
„ <i>mollis</i> (JACQ.) ASCH. . .	6		„ „ „ „
„ <i>montana</i>		10	MANN, 1922.
	6	12 & 24	HOLLINGSHEAD, 1928a.
„ <i>montana</i> D'URV.	6		BABCOCK & LESLEY, 1926.
„ <i>pygmaea</i> L.	6		„ „ „ „
„ <i>Sieberi</i> BOISS. ³⁾	6	12	MANN 1925.
Section <i>Youngia</i> CASS.			
<i>Crepis fuscicarpa</i> (THW.) BENTH.	8		BABCOCK & LESLEY, 1926
„ <i>japonica</i> BENTH	8		TAHARA, 1910.
„ <i>japonica</i> (L.) BENTH. . .	8	16	MANN, 1925.
	8		BABCOCK & LESLEY, 1926.

¹⁾ In 5 metaphases in root-tip cells, out of 257 examined, S. NAWASCHIN (1926) found association of homologous chromosomes.

²⁾ Of 4,000 plants examined, 16 had 3n, 5 had 4n, a few (18 in all) had 1, 2 or 3 extra chromosomes. One plant showed a cell in the root-tip with 128n (> 500) chromosomes. In diploid cells, one pair of chromosomes (D) had satellites. In 3 cases a new (n) chromosome unlike any of the 2n complex appeared.

³⁾ According to BABCOCK & LESLEY (1926), for *Crepis Sieberi* Boiss. read *C. montana* D'URVILLE.

COMPOSITAE (continued)		n	2n	
Section <i>Aetheorrhiza</i> Cass.				
<i>Crepis bulbosa</i>			18	MANN, 1922.
" <i>bulbosa</i> (L.) TAUSCH.	9	18		" 1925.
	9			BABCOCK & LESLEY, 1926.
Section <i>Omalocline</i>				
<i>Crepis aurea</i> (L.) REICHB.	5	10		MANN, 1925.
	5			BABCOCK & LESLEY, 1926.
" <i>Hookeriana</i> BALL.	4			" " " "
Section <i>Soyeria</i>				
<i>Crepis blattaroides</i>		8		ROSENBERG, 1920.
	4			MARCHAL, 1920.
" <i>blattaroides</i> VILL.	4	8		MANN, 1925.
	4			BABCOCK & LESLEY, 1926.
" <i>grandiflora</i>		8		MANN, 1922; NAWASCHIN, M., 1925a.
" <i>grandiflora</i> TAUSCH.	4	8		MANN, 1925.
" <i>grandiflora</i> TAUSCH. ¹⁾				
= <i>Crepis conyzaeifolia</i>				
(GOUAN) DALLA TORRE	4			BABCOCK & LESLEY, 1926.
" <i>paludosa</i> (L.) MNCH.	6			" " " "
" <i>sibirica</i>	4			MARCHAL, 1920.
" <i>sibirica</i> L.	5	10		MANN, 1925.
	5			BABCOCK & LESLEY 1926.
" <i>tingitana</i> SAIZ et BALL.	5			" " " "
Section (?) ²⁾				
<i>Crepis agrestis</i>	4			ROSENBERG, 1918.
		8		" 1920.
" <i>amplexicaule</i>		8		" "
" <i>barbata</i>	9			" 1918.
" <i>Burenania</i>		8 & 16		HOLLINGHEAD, 1928a.
" <i>dichotoma</i>	3			ROSENBERG, 1918.
" <i>Hakelei</i>		16 & ca. 32		HOLLINGSHEAD, 1928a.
" <i>Jacquini</i>		42		ROSENBERG, 1920.
" <i>multicaulis</i>	5			" 1918.
" <i>nicaensis</i>	4			" "
		8		" 1920.
" <i>polymorpha</i> var. <i>stricta</i>	3			" 1918.
" <i>Reuteriana</i>	3			" "
" <i>Reuteriana gigas</i>		12		" 1920.
" <i>rigida</i>	5			" 1918.
" <i>virens gigas</i>		12		" 1920.

¹⁾ According to BABCOCK & LESLEY (1926), for *C. grandiflora* TAUSCH read *C. conyzaeifolia* (GOUAN) DALLA TORRE.

²⁾ The following species were not arranged according to sections.

COMPOSITAE (continued)

	n	2n	
<i>Crepis</i> Hybrids:			
<i>Crepis biennis</i> × <i>C. foetida</i> . . .		25 & ca. 50 ¹⁾	LESLEY, M. M., 1925.
„ <i>biennis</i> × <i>C. setosa</i> . . .		24 & 48	HOLLINGSHEAD, 1928a.
„ <i>biennis</i> × (<i>C. setosa</i> × <i>C. biennis</i> F ₂)	ca. 15	32	MANN, 1922.
„ <i>capillaris</i> × <i>C. aspera</i> F ₁	7 ²⁾	7 ³⁾	NAWASCHIN, M., 1927b, c.
	$\frac{2}{2}$		
„ <i>capillaris</i> × <i>C. aspera</i> F ₂ ⁴⁾	3 + $\frac{4}{2}$	10 ⁵⁾	NAWASCHIN, M., 1927b.
„ <i>capillaris</i> × <i>C. aspera</i> F ₂		11 ⁶⁾	„ „ „
„ <i>capillaris</i> × <i>C. aspera</i> F ₂ (<i>capillaris</i> like) . . .		10 ⁷⁾	„ „ 1927c.
„ <i>capillaris</i> × <i>C. aspera</i> F ₂ (<i>aspera</i> like) . . .	7, 11 ⁸⁾ , 12 ⁹⁾	„	„ „
„ <i>capillaris</i> × <i>C. aspera</i> F ₂ (<i>setosa</i> like)		11 ¹⁰⁾	„ „ „
„ <i>capillaris</i> × <i>C. parviflo-</i> <i>ra</i> ⁴⁾		7 ⁵⁾ , 11)	„ „ 1927b, c.
„ <i>capillaris</i> × <i>C. rubra</i> ⁴⁾ .		9	„ „ „
„ <i>capillaris</i> × <i>C. rubra</i> . . .		10 ¹²⁾	„ „ 1927c.
„ <i>capillaris</i> × <i>C. tectorum</i>		7 ³⁾ , 11)	BABCOCK & COLLINS, 1920a, b; NAWASCHIN, M., 1927c.
		10	„ „ 1927b.

¹⁾ In a few cells of the root of an F₁ of this hybrid, about twice 25 chromosomes were found, whereas most of the cells contained 25.

²⁾ Examination of 3 fertile plants by M. NAWASCHIN (1927c) showed variation in the way these 7 chromosomes were distributed to the 2 poles; either by random distribution, as of 7 univalents, or by division of all 7 chromosomes; or by an intermediate condition of these 2 types.

³⁾ These hybrids possessed the haploid sets of both parents (M. NAWASCHIN, 1927c).

⁴⁾ In these hybrids the chromosomes showed that they had undergone morphological changes (M. NAWASCHIN, 1927b).

⁵⁾ A haploid set of *C. aspera* and a diploid set of *C. capillaris* made up this number.

⁶⁾ A diploid set of *C. aspera* and a haploid set of *C. capillaris* made up this number.

⁷⁾ Two such plants had a diploid set of *C. capillaris* and a haploid set of *C. aspera* chromosomes. Division was regular with 3 gemini (the *C. capillaris* chromosomes) and 4 univalents (the *C. aspera* chromosomes) in diakinesis. These F₂ plants were characterized by a change in one of the „A” chromosomes.

⁸⁾ Four plants had a diploid set of *C. aspera* and a haploid set of *C. Capillaris* chromosomes.

⁹⁾ One plant had a diploid set of *C. aspera* and a haploid set of *C. capillaris* + 1 extra chromosome. This plant was abnormal and weak.

¹⁰⁾ These plants contained the haploid chromosome sets of *C. capillaris*, *C. aspera* and *C. setosa*.

¹¹⁾ In 3 hybrids M. NAWASCHIN (1927c) states that there was a change from the chromosome complex of the 2 parents, as seen in the loss of the trivalent of the „D” chromosome and in the change in the arm of the „A” chromosome.

¹²⁾ This hybrid possessed a diploid set of *C. capillaris* and a haploid set of *C. rubra*.

COMPOSITAE (continued)	n	2n	
<i>Crepis</i> (continued)			
<i>Crepis capillaris</i> × <i>C. tectorum</i>			
F ₂ ¹⁾		11 ²⁾	NAWASCHIN, M., 1927b, c.
" foetida × <i>C. rubra</i> . .		9 ³⁾	" " 1927c.
" setosa × (<i>C. setosa</i> HALL × <i>C. capillaris</i> (L.) WALLR. F ₁		7, 8, 10	MANN, 1922.
" setosa × <i>C. biennis</i> F ₂ .		25	" "
" setosa × (<i>C. setosa</i> × <i>C.</i> <i>biennis</i> F ₂)		17, 18	MANN, 1922.
" tectorum L. ♀ × <i>C. al-</i> <i>pina</i> ♂		10 ⁴⁾	NAWASCHIN, M., 1927a, d, e.
<i>Hieracium alpinum</i>	$\frac{27_1}{2}$		ROSENBERG, 1926.
		27	" 1927a.
" asperulum		27	" "
" auricula	7-9		" 1907b.
	9	18	" 1917.
" auricula (LYON) . .	$9 + \frac{18}{2}$		" "
" aurantiacum	ca. 18	ca. 36	" "
" balcanum		36	" 1927a.
" bifidum		18	" "
" boreale	$.9-10 + \frac{11_1-27_1}{2}$	27	" "
" boreale forma . . .	$10 + \frac{15_1}{2}$	36	" "
" Bornmulleri		27	" "
" excellens	18	42	" 1917.
" flag-lare	21		" 1907a.
" hirsutum		36	" 1927a.
" intybaceum	$\frac{27_1}{2}$		" "
" lacerum		27	" 1917, 1927a.

¹⁾ In these hybrids the chromosomes showed that they had undergone morphological changes (M. NAWASCHIN, 1927b).

²⁾ One plant was obtained which showed a diploid set of *C. tectorum* and a haploid set of *C. capillaris*. The "D" chromosomes in this F₂ plant also lacked the satellites but had "a small head" instead (M. NAWASCHIN, 1927c).

³⁾ In 3 hybrids M. NAWASCHIN (1927c) states that there was a change from the chromosome complex of the 2 parents, as seen in the loss of the trabant of the "D" chromosome and in the change in the arm of the "A" chromosome.

⁴⁾ Cytological investigation of one alpina-like plant of the hybrid progeny showed 10 chromosomes quite like *C. alpina*. NAWASCHIN considered this a case of merogony (nucleus contributed by ♂ parent and protoplasm by ♀ parent).

COMPOSITAE (continued)	n	2n	
<i>Hieracium</i> (continued)			
<i>Hieracium laevigatum</i>		27	ROSENBERG, 1917.
	$\frac{17_1}{2}$		" 1927a.
" <i>Pilosella</i>	18	36	" 1917.
" <i>pseudoillyricum</i> . .		27	" "
" <i>pseudoillyricum</i> . .	$\frac{27_1}{2}$	27	" 1927a.
" <i>pulmonarioides</i> . .	$\frac{27_1}{2}$		" 1926.
		36	" 1927a.
" <i>sabaudum</i>		27	" "
" <i>silvestre</i>		27	" 1917.
" <i>speciosum</i>		27	" 1927a.
" <i>transsylvanicum</i> . .		18	" "
" <i>tridentatum</i>		27	" "
" <i>umbellatum</i>	9	18	JUEL, 1905.
		18	ROSENBERG, 1927a.
		27	" "
	$\frac{27 \& 54^1}{2}$		" 1927b.
" <i>umbellatum</i> var. <i>li-</i>			
<i>nearifolium</i>		27	" 1917.
" <i>venosum</i>	7		" 1907a, b.
" <i>virgaurea</i>		18	" 1927a.
" <i>virosum</i>		36	" "
" (diverse forms) . .		18	GRÉGOIRE, 1912.
<i>Leontodon autumnalis</i>	6		MARCHAL, 1920.
		12	NAWASCHIN, M., 1916.
" <i>autumnalis</i> L. . . .	6		MEYER, K., 1925.
<i>Chondrilla juncea</i>	$\frac{14-16}{2}$		ROSENBERG, 1912.
<i>Taraxacum albidum</i> DAHLST. .		36-40	OSAWA, 1913a.
" <i>confertum</i>	8		ROSENBERG, 1909b.
" <i>erythrospermum</i>			
ANDRZ.		26-30	STORK, 1920.
" <i>officinale</i>		26	GRÉGOIRE, 1912.
	12-13	ca. 24 ²⁾	JUEL, 1905.
		22-(24)	HEITZ, 1926.
" <i>platycarpum</i> DAHLST. .	8		OSAWA, 1913a.
<i>Lactuca dentata</i> var <i>Thunbergii</i>	11-12		ISHIKAWA, 1921

¹⁾ A few restitution nuclei containing 54 chromosomes were found in this parthenogenetic species.

²⁾ Occasionally 22 and 26 chromosomes were counted.

COMPOSITAE (continued)	n	2n
<i>Lactuca</i> (continued)		
<i>Lactuca lanceolata</i>	5	ISHIKAWA, 1916, 1921.
„ <i>lanceolata</i> var. <i>platyphylla</i>	5	TAHARA & ISHIKAWA, 1911; TAKAMINE, 1923.
„ <i>lanceolata</i> var. <i>platyphylla</i> (FRANCH et SAV.) MAKINO	5	TAKAMINE, 1916.
„ <i>lanceolata platyphylla</i>	5	ISHIKAWA, 1921.
„ <i>muralis</i>	9	GATES & REES, 1921.
„ <i>sativa</i>	9	GATES, 1920.
„ <i>scariola</i>	9	GATES & REES, 1921.
„ <i>scariola</i> var. <i>sativa</i>	9	ISHIKAWA, 1921.
„ <i>Thunbergiana</i>	11-12	TAHARA & ISHIKAWA, 1911; ISHIKAWA, 1916.
<i>Picridium hispanicum</i>		16 BORGENSTAM, 1922.
<i>Sonchus oleraceus</i>	16 ¹⁾	ISHIKAWA, 1911b, 1916.
	8	MARCHAL, 1920.
<i>Tragopogon porrifolius</i>	6	WINGE, 1927b.
„ <i>pratensis</i>	6	BEER, 1912; WINGE, 1927b.
	7	ISHIKAWA, 1916.
„ <i>pratensis</i> × <i>porrifolius</i> F ₁	12	WINGE, 1927b.
„ <i>pratensis</i> × <i>porrifolius</i> F ₂	12, 24 ²⁾	SKOWROWN given by WINGE 1927b.

MONOCOTYLEDONEAE

PANDANALES

TYPHACEAE

<i>Typha angustifolia</i>	ca. 15 ³⁾	ROSCOE, 1927c.
„ <i>angustifolia</i> var. <i>Muel-leri</i> GRAEB.	30	„ „
„ <i>angustifolia</i> hybrid.	ca. 15 ⁴⁾	„ „
„ <i>latifolia</i>	15	„ „

HELIOBAE

POTAMOGETONACEAE

<i>Zostera marina</i> L.	ca. 13	ROSENBERG, 1901, 1904b.
----------------------------------	--------	-------------------------

¹⁾ In previous list, GAISER (1926), the number was incorrectly given as 8 for ISHIKAWA (1916).

²⁾ This number was found in parts of two root-tips, which showed larger cells.

³⁾ The presence of bivalents and univalents made it impossible to determine the exact number of chromosomes. As many as 22 units were counted in diakinesis.

⁴⁾ Metaphases may be regular and show only bivalents or may include univalents as well as bivalents (ROSCOE, 1927c).

POTAMOGETONACEAE (continued) n		2n	
<i>Potamogeton foliosus</i> RAF.	7		WIEGAND, 1899.
<i>Ruppia maritima</i>		16	GRAVES, 1903.
" <i>rostellata</i> KOCH.	3		MÜRBECK, 1902.
NAIADACEAE			
<i>Najas major</i>	6	12	GUIGNARD, 1899a, b.
	6	12 ¹⁾	TSCHERNOVAROW, 1914.
" <i>major</i> ALL.	6		GUIGNARD, 1898.
	6 ²⁾	12 ¹⁾	TSCHERNOVAROW, 1927.
			TAKAMINE, 1927.
" <i>marina</i> L. (= <i>N. major</i>)		14	MÜLLER, C., 1912.
	6	12, 14	WINGE, 1927a.
" <i>flexilis</i>	8-12		CAMPBELL, 1897.
APONOGETONACEAE			
<i>Aponogeton distachyus</i>	3	16	SERGUEEFF, 1907.
	ca. 16		SUSSENGUTH, 1920.
<i>Aponogeton fenestralis</i> Hook.f.	8		SERGUEEFF, 1907.
ALISMACEAE			
<i>Sagittaria sagittifolia</i>		16	LIEHR, 1916.
" <i>L. F. sinensis</i> MAK.		20	NAWA, 1928.
<i>Alisma plantago</i>		12	LIEHR, 1916.
BUTOMACEAE			
<i>Butomus umbellatus</i> L.	11-12		HOLMGREN, 1913.
" <i>umbellatus</i>		16	LIEHR, 1916.
		40 ³⁾	TERBY, 1922.
<i>Hydrocleis nymphaeoides</i>		12 ⁴⁾	SUSSENGUTH, 1920. 1921.
HYDROCHARITACEAE			
<i>Elodea canadensis</i>	ca. 12 ⁵⁾		WYLIE, 1904.
	24	48	SANTOS, 1924.
<i>Vallisneria gigantea</i> GRAEBN.	20	40	JØRGENSEN, 1927a.
" <i>spiralis</i> L.	10	20	" "
" <i>spiralis</i>	8-9 ⁶⁾	17-18	WINGE, 1923.
		20 ⁷⁾	(NEWTON) reported by BLACKBURN, (1926) 1929.
	10	20	WINGE, 1927a.

¹⁾ One pair of chromosomes possessed satellites.

²⁾ Seven chromosomes were sometimes found in the homeotypic metaphase and the extra small one was thought to have resulted from transverse division of a chromosome having a satellite.

³⁾ In previous list (GAISER, 1926) the number 40 was omitted from the diploid column column for TERBY, 1922.

⁴⁾ This number was determined in the embryo-sac-mother cell.

⁵⁾ Heterochromosomes were found: ♀ 2n = 46 + 2x; ♂ 2n = 46 + x + y; ♀n = 23 + x; ♂n = 23 + x or 23 + y.

⁶⁾ WINGE (1923) found heterochromosomes as follows: ♀ 2n = 16 + x + x; ♂ 2n = 16 + x; ♀n = 8 + x; ♂n = 8 + x or 8.

⁷⁾ According to NEWTON, the somatic chromosome number is 20 for both sexes.

HYDROCHARITACEAE (continued) n

2n

Hydrilla verticillata PRESL. . .24¹⁾ SINOTO & KIOHARA, 1928.

TRIURIDALES

TRIURIDACEAE

Sciaphila japonica 24

48 (OGHA 1916) given by ISHIKAWA, 1916.

„ spec. (approaching S.

Andajensis BECC. . ca. 12

WIRZ, 1910.

GLUMIFLORAE

GRAMINEAE

Zea Mays ²⁾ $\frac{20_1}{2}$ $1 + \frac{18_1}{2}$ $2 + \frac{16_1}{2}$ etc.

rarely 10

BEADLE & MCCLINTOCK, 1928.

Zea Mays L. 10LONGLEY, 1924³⁾, 1927b⁴⁾;
RANDOLPH & MCCLINTOCK,
1926.10₃30 RANDOLPH & MCCLINTOCK,
1926.*Zea Mays* L. (sugary varieties)⁵⁾ 10

KUWADA, 1925.

11-12⁶⁾

20-22

„ „

 $\frac{21, 11^8)}{2}$

LONGLEY, 1925.

Alpha 10

20

RANDOLPH, 1928.

Bantam Evergreen 10

20

„ „

Black Mexican ⁴⁾ 12

20-24

KUWADA, 1915, 1919.

8-11

20-23

FISK, 1925.

9-11⁷⁾22⁸⁾

FISK, 1927.

¹⁾ At diakinesis, metaphase and anaphase of the first meiotic division in microsporocytes, one geminus is seen to consist of a longer and a shorter chromosome.²⁾ This collection of maize plants was considered to carry factors for male sterility.³⁾ LONGLEY (1924) studied 4 varieties of maize, including Chinese Waxy and Tepic.⁴⁾ LONGLEY (1927b) states that in the following varieties (Golden Bantam, Stowell's Evergreen, and more frequently in Country Gentleman, Black Mexican, White Sheath, and White Dent Crosby) plants occurred with a somatic number of more than 20 chromosomes.⁵⁾ KUWADA (1911, 1915, 1919) thought there was a tendency for sugar corns to have a higher chromosome number than starch corns ($n = 10$). In 1925 KUWADA studied sugar corns from 5 sources and only in material from one source (i.e., the Agr. Coll., Tokyo Imp. Univ.) did he find irregular numbers.⁶⁾ In 2 strains of sweet corn, LONGLEY (1925) found 21 and 11 chromosomes. $\frac{2}{2}$ ⁷⁾ In 3 plants there were 11 to 13 bivalents, but more frequently there were fewer (9-11) present, and some additional (1-6) round bodies.⁸⁾ A variation of 20-23 was found in the somatic counts, but 22 was the number in the majority of cells.

GRAMINEAE (continued)	n	2n	
<i>Zea</i> (continued)			
	ca. 12	24	REEVES, 1925.
	11+2 ₁ ,		
	12+1 ₁ ,		
	12+3 ₁ , 13,	20, 23,	RANDOLPH, 1928.
	13+1 ₁ , 14	28 ¹⁾	
<i>Country Gentleman</i> ¹⁾ . . .	10		KIESSELBACH & PETERSEN, 1925.
<i>Crosby</i>	10	20	FISK, 1925.
	10		„ 1927.
<i>Early Eight Sugar Corn</i> . .	9-12		KUWADA, 1911.
<i>Early White Evergreen</i> . . .	10	20	RANDOLPH, 1928.
<i>Evergreen</i>	10 ²⁾	20	FISK, 1925, 1927.
<i>Golden Bantam</i> ¹⁾	10		REEVES, 1925.
	10 ²⁾	20 ³⁾	FISK, 1925, 1927.
	10, 10+	20-22	RANDOLPH, 1928.
<i>Hickox Sweet</i>	10 ⁴⁾		FISK, 1927.
<i>Red Sugar Corn</i>	9-12		KUWADA, 1911.
<i>Stowell's Evergreen</i> ⁵⁾ . . .	10		REEVES, 1925.
<i>Sugar Corn</i>	9-11, 12,		KUWADA, 1915, 1919.
	13-14		
<i>Zea Mays</i> L. (Flint Varieties):			
<i>Argentine</i>	10		REEVES, 1925.
<i>Gehu</i>	10		KIESSELBACH & PETERSEN, 1925.
<i>Hall's Golden Nugget</i> . . .	10, 10+1 ₁	21, 21	RANDOLPH, 1928.
<i>King Philip's</i>	10		KIESSELBACH & PETERSEN, 1925; REEVES, 1925.
<i>Lancaster</i>	10		REEVES, 1925.
<i>Luce's Favorite</i>	10	20	RANDOLPH, 1928.
<i>New York State Flint</i> . . .	10, 11+1 ₁ , 20-32 ⁶⁾		„ „
	10+3 ₁		
<i>Red Flint</i>	10	20	FISK, 1925.
	10		„ 1927.
<i>White Australian</i>	10		KIESSELBACH & PETERSEN, 1925.

¹⁾ Eighteen out of 20 plants showed extra chromosomes (20-28) with a majority having 23.

²⁾ In diakinesis, 9 or 10, and 10 or 11 chromosomes could be counted and only once, in Golden Bantam, 9 and 11 were counted in homoeotypic metaphase.

³⁾ In somatic counts there were variations of 19 or 20 and 20 or 21.

⁴⁾ There were variations of 1 chromosome in the counts, as 9 or 10, and 10 or 11.

⁵⁾ See pag. 340 foot-note 4.

⁶⁾ A high percentage (8 of 10 plants) showed extra chromosomes, 20-23.

GRAMINEAE (continued)	n	2n	
<i>Zea</i> (continued)			
<i>White Flint</i>	10 ¹⁾		Kuwada, 1911.
<i>Yellow Flint</i>	10	20 ²⁾	Fisk, 1925, 1927.
<i>Zea Mays</i> L. (Dent Varieties):			
<i>Bloody Butcher</i>	10	20	Randolph, 1928.
<i>Calico</i> (North Platte)	1;		Kieselbach & Petersen, 1925.
<i>Cornell II</i>	10	20	Randolph, 1928.
<i>Douthit Prolific</i>	10		Kieselbach & Petersen, 1925.
<i>Earliest of Early Dents</i>	10	20	Randolph, 1928.
<i>Esperanza</i>	10		Kieselbach & Petersen, 1925.
<i>Eureka</i>	10	20	Randolph, 1928.
<i>Golden Glow Dent</i>	10 ¹⁾	20 ²⁾	Fisk, 1925, 1927.
<i>Hogue Yellow Dent</i>	10		Kieselbach & Petersen, 1925.
<i>Inbred Strains</i> (Hogue Nos.) ³⁾	10		Kieselbach & Petersen, 1925.
<i>Leaming</i>	10	20	Randolph, 1928.
<i>Mexican June</i>	10		Kieselbach & Petersen, 1925.
<i>Minnesota 13</i>	10	20	Randolph, 1928.
<i>Nevada White Prize</i> Nos. 659 & 676	10		Kieselbach & Petersen, 1925.
<i>Pride of Michigan</i>	10	20	Randolph, 1928.
<i>Pride of the North</i>	10		Kieselbach & Petersen, 1925.
<i>Pride of Saline</i>	10		Kieselbach & Petersen, 1925.
<i>Reid Yellow Dent</i>	10		Kieselbach & Petersen, 1925.
<i>Substation White</i>	10		Kieselbach & Petersen, 1925.
(One commercial race)	10		Reeves, 1925.
<i>Zea Mays</i> (varieties valled „Starch”)	12,13 ⁴⁾		Longley, 1925.
<i>Black Starch</i>	7-10		Kuwada, 1915, 1919.

¹⁾ There were variations of 1 chromosome in the counts, as 9 or 10 and 10 or 11.

²⁾ In somatic counts there were variations of 19 or 20 and 20 or 21.

³⁾ Hogue Nos. 8, 724, 726, 731, 742, and 745.

⁴⁾ In 25 strains of starchy maize, Longley (1925) found 12, 13 chromosomes.

GRAMINEAE (continued)	n	2n	
<i>Zea</i> (continued)			
<i>Red Starch</i>	9-10		KUWADA, 1911
<i>Yellow Starch</i>	10		" "
<i>Starchy heterozygous for dwarf</i>		20 ¹⁾	FISK, 1927.
<i>Zea Mays</i> (Pop Corns)			
<i>Amber Rice Pop Corn</i>	10-11		KUWADA, 1915, 1919.
<i>Black Beauty Pop</i>	10	20	RANDOLPH, 1923.
<i>Red Pericarp Pop</i>	10	20	" "
<i>Tom Thumb</i>	10		REEVES, 1925.
<i>White Pearl Pop</i>	10		KIESSELBACH & PETERSEN, 1925.
<i>White Rice Pop</i>	10	20	RANDOLPH, 1923.
<i>Pop Corn</i>	10	20 ¹⁾	FISK, 1925, 1297.
<i>Zea Mays</i> L. (24 genetical cultures)		20-26 ²⁾	RANDOLPH, 1923.
" <i>Mays</i> L. „anther-eared semi-dwarf”	10	20	FISK, 1925.
	10 ³⁾		" 1927.
" <i>Mays Chinese Corn</i>	10		KUWADA, 1915, 1919; KIESSEL- BACH & PETERSEN, 1925
" <i>Mays</i> L. Floury Corn. . . .	10	20	FISK, 1925.
		20 ¹⁾	" 1927.
" <i>Mays Golden Broach field corn</i>	10		KUWADA, 1911.
" <i>Mays</i> L. var. <i>indentata</i> . .		20 ⁴⁾	KOSHUCHOW, 1927, 1923.
" <i>Mays</i> L. var. <i>tunicata</i> . .	10		KUWADA, 1915, 1919.
" <i>ramosa</i>	10	20	FISK, 1925.
		20 ⁵⁾	" 1927.
	10		KIESSELBACH & PETERSEN, 1925.
" <i>Mays</i> (Amber Rice Pop Corn × Black Mexican) . . .	10		KUWADA, 1915, 1919.
" <i>Mays</i> (Amber Rice Pop Corn × Sugar Corn)	9-11, 12, 13-14		KUWADA, 1915, 1919.
" <i>Mays</i> (Golden Glow Dent × Crosby Sweet)	10		FISK, 1925, 1927.
" <i>Mays</i> (Golden Glow Dent × Black Mexican)	16 ⁶⁾		" " "

¹⁾ In somatic counts there were variations of 19 or 20 and 20 or 21 chromosomes.

²⁾ 68 % of the plants of 24 genetical cultures had > 20 chromosomes.

³⁾ There were variations of 1 chromosome in the counts, as 9 or 10, and 10 or 11.

⁴⁾ Tetraploid and octoploid numbers were obtained as a result of treatment of seedlings with higher and lower than optimal temperatures for germination.

⁵⁾ In somatic counts there were variations of 19 or 20 and 20 or 21 chromosomes.

⁶⁾ There were variations of 9, 10 10 + 1, 11 on the heterotypic spindle (Fisk 1927)

GRAMINEAE (continued)	n	2n	
<i>Zea</i> (continued)			
<i>Zea Mays</i> (Evergreen Sweet × Golden Bantam F ₂) . . .	10		FISK, 1925, 1927.
<i>Coix agrestis</i> Lowr. ¹⁾ . . .		20	KUWADA, 1915, 1919.
„ <i>lachryma jobi</i> L. ¹⁾ . . .	10		LONGLEY, 1924b.
		20	TAYLOR, 1925c.
<i>Tripsacum lanceolatum</i> RUPR.	ca. 35		LONGLEY, 1924b.
„ <i>laxum</i> NASH . . .	ca. 35		„ „
„ <i>pilosum</i> SCRIBN. & MERR.	ca. 35		„ „
„ <i>Barberi</i> JESW. . .	46		JESWIET, 1928.
„ <i>officinarum</i> . . .		28	FRANCK, 1911.
		68	KUWADA, 1915, 1919.
	40		BREMER, 1928a, c ²⁾ , d.
„ <i>officinarum</i> var. <i>Ardjoeno</i>	40		„ 1923, 1924, 1928c.
„ <i>officinarum</i> var. <i>Batjan</i>	40		„ „ „ „
„ <i>officinarum</i> <i>Banjarmasin hitam</i> . .	40		„ „ „
„ <i>officinarum</i> var. <i>Black Cheribon</i> . .	40	ca. 80	„ „ „
„ <i>officinarum</i> var. <i>chunnee</i>	46–50	ca. 91	„ „
<i>Saccharum officinarum</i> var. <i>Fidji</i>	40	ca. 80	BREMER, 1923, 1924.
„ <i>officinarum</i> var. <i>Green German New Guinea</i>	40		„ „ „
„ <i>officinarum</i> var. <i>Teboe Hitam Rokan</i> . .	ca. 30		„ „
„ <i>officinarum</i> var. <i>Hitam Rokan</i> . .	33–35	55	„ 1925.
„ <i>officinarum</i> var. <i>Lahaina</i>		80	„ 1924
	40		„ 1928c.
„ <i>officinarum</i> „ <i>Loethers</i> ” ³⁾	ca. 50	98–99	„ 1923, 1924.
	99		„ 1928c, d.
	$\frac{2}{2}$		

¹⁾ *Coix agrestis* Lowr. and *C. lachryma jobi* L. may be the same species.

²⁾ Many varieties were examined by BREMER (1928c).

³⁾ BREMER (1928c) speaks of Loethers cane as *Saccharum* hybrid.

JESWIET (1928) speaks of Loethers cane as probably related to *Saccharum sinense* ROXB.

GRAMINEAE (continued)	n	2n	
<i>Saccharum</i> (continued)	49		JESWIET, 1928.
<i>Saccharum officinarum</i> var.			
<i>Red Egyptian cane</i>		ca. 80	BREMER, 1923.
<i>officinarum</i> var.			
<i>Ruckee</i>	46-48	" "	
<i>officinarum</i> var.			
<i>Tanangge</i>	30	"	1925.
<i>officinarum</i> var.			
<i>Teboe Sampang A</i>	ca. 40	"	1923.
<i>officinarum</i> CK 28	40	"	1928c.
<i>spontaneum</i> . . .		ca. 68	KUWADA, 1915, 1919.
<i>spontaneum</i> (glagah			
of Java)	56		BREMER, 1928a, b, c, d.
<i>spontaneum</i> (Glagah			
Tabongo of Cele-			
bes) ¹⁾	40	"	1925, 1928b, c, d.
<i>spontaneum</i> (Glagah			
alas Djatiroto) . .	56	"	1923.
<i>spontaneum</i> (Glagah			
alas Kepandjin . .	56	"	"
<i>spontaneum</i> (Glagah			
Kletak III) . . .	56	"	"
<i>spontaneum</i> (Glagah			
alas Soemberpoetih)	56	"	1928c.
<i>spontaneum</i> (Glagah			
alas Troeno) . . .	56	"	"
„Kassover” (probably <i>S. of-</i>			
ficinarum			
× <i>S. spontaneum</i>)	68	"	1923, 1928c, d.
„Naz Reunion” (<i>Saccharum</i>			
hybrid(?))	109-110	"	1928c.
	$\frac{2}{2}$		
<i>Saccharum officinarum</i> × <i>S.</i>			
<i>spontaneum</i> (Gla-			
gah Tabongo) . .	120	"	1928d.
	$\frac{2}{2}$		
<i>officinarum</i> Ardjoe-			
no) × <i>S. sponta-</i>			
neum (Glagah Ta-			
bongo)	120	"	1928c.
	$\frac{2}{2}$		

¹⁾ In BREMER (1925) and (1928b) *Glagah Tabongo* was given as a variety of *S. officinarum* but in BREMER (1928c and d) *Glagah Tabongo* from Celebes is given under *spontaneum*.

GRAMINEAE (continued)	n	2n	
<i>Saccharum</i> (continued)			
<i>Saccharum officinarum</i> × <i>S. spontaneum</i> F ₁ . .	$\frac{136}{2}$		BREMER, 1928a.
	$62-66 + \frac{12_1-14_1}{2}$		„ 1928c.
„ <i>officinarum</i> × <i>S. spontaneum</i> (Celebes)	$\frac{136}{2}$		„ 1928a.
„ <i>officinarum</i> × „Kassoer”	ca. $\frac{148}{2}$		„ 1928d.
„ <i>officinarum</i> (Bandjarmasin hitam × „Loethers”) 100 POJ		89	„ 1924.
„ <i>officinarum</i> × „Loethers” 100 POJ	$\frac{89}{2}$		„ 1928c, d.
„ <i>officinarum</i> (Djamprox) × „Loethers” = <i>Koesoma</i> . . .		93	„ 1924.
„ <i>officinarum</i> × „Loethers” = <i>Koesoma</i>	$\frac{93}{2}$		„ 1928c.
„ „Loethers” × <i>S. spontaneum</i> . . .	ca. $\frac{127}{2}$		„ „
„ 100 POJ × <i>S. spontaneum</i>	70(?) ca. $\frac{127}{2}$		„ 1928d. „ 1928c.
„ <i>officinarum</i> × <i>S. spontaneum</i> F ₂ . .	ca. $\frac{136}{2}$		„ „
„ <i>officinarum</i> × (<i>S. officinarum</i> × <i>S. spontaneum</i>) . . .	$\frac{148}{2}$		„ 1928a, c.
„ <i>spontaneum</i> × (<i>S. officinarum</i> × <i>S. spontaneum</i>) . . .	62		„ 1928c.
„ <i>officinarum</i> × [<i>S.</i>			

GRAMINEAE (continued)	n	2n
<i>Saccharum</i> (continued)		
<i>officinarum</i> × <i>S. officinarum</i> × <i>S. spontaneum</i>]. . .	57	BREMER, 1928c
" <i>spontaneum</i> × { <i>S. officinarum</i> × [<i>S. officinarum</i> × (<i>S. officinarum</i> × <i>S. spontaneum</i>)]} . .	> $\frac{160}{2}$	" "
" <i>officinarum</i> × <i>S. spontaneum</i> × { <i>S. officinarum</i> × [<i>S. officinarum</i> × (<i>S. officinarum</i> × <i>S. spontaneum</i>)]} . .	57	" "
{(" <i>officinarum</i> × <i>S. spontaneum</i> × <i>S. officinarum</i> } × <i>S. officinarum</i> . . .	$\frac{106-120}{2}$	" 1928a.
{ " <i>officinarum</i> × <i>S. spontaneum</i> (n = 57) } × <i>S. spontaneum</i>	ca. $\frac{170}{2}$	" "
<i>S. officinarum</i> × <i>S. spontaneum</i> crosses:		
(<i>Gestreept Preanger</i> × <i>Glagah alas Troeno</i>) 106	$\frac{136}{2}$	" "
(<i>Gestreept Preanger</i> × <i>Glagah alas Troeno</i>) 107	$\frac{136}{2}$	" "
(<i>Zwart Borneo</i> × <i>Glagah alas Soemberpoetih</i>) I 1052, I 1056	$\frac{136}{2}$	" "
(<i>Soerat Banteng</i> × <i>Glagah alas Soemberpoetih</i> , I 1064, I 1072	$\frac{136}{2}$	" "
(<i>Lahaina</i> × <i>Glagah alas</i>		

GRAMINEAE (continued)	n	2n
<i>Saccharum officinarum</i> × <i>S.</i> <i>spontanum</i> F ₂ crosses (continued)		
Soemberpoetih I 1078, 1080, 1086	136 <u>2</u>	BREMER, 1928c
(2064 POJ (Zw. Cheribon × Fidji) × Glagah alas Troeno) 2775 POJ	136 <u>2</u>	" "
Teboe Monjet (<i>S. officinarum</i> × Glagah)	143-144 <u>2</u>	" "
<i>Saccharum officinarum</i> × <i>S.</i> <i>spontanum</i> F ₂ :		
2027 POJ Kassoer	129-130 <u>2</u>	" "
2028 POJ Kassoer	±136 <u>2</u>	" "
238 K ₂ I 1086 = Lahaina × Glagah alas Soemberpoetih	136-137 <u>2</u>	" "
238 Kg, I 1086 = Lahaina × Glagah alas Soember- poetih . ×	134 <u>2</u>	" "
K 1539, I 1061 = Zwart Borneo × Glagah alas Soemberpoetih	136 <u>2</u>	
K 1541, I 1061 = Zwart Bor- neo × Glagah alas Soem- berpoetih	134-136 <u>2</u>	" "
K 1545, I 1063 = Soerat Ban- ting × Glagah alas Soem- berpoetih	136 <u>2</u>	" "
2 K 16, I 1063 = Soerat Ban- ting × Glagah alas Soem- berpoetih	136 <u>2</u>	" "
I 1087, G 107 = Gestreept Preanger × Glagah alas Troeno	132-133 <u>2</u>	" "

GRAMINEAE (continued)	n	2n	
<i>Saccharum officinarum</i> × <i>S.</i> <i>spontaneum</i> F ₂ (continued)			
I 1090, G 107 = <i>Gestreept</i> <i>Preanger</i> × <i>Glagah alas</i>			
<i>Troeno</i>	125-126-128		BREMER, 1923c.
	<u>2</u>		
<i>Suikerriet</i> × <i>Glagah</i> :			
#581 (<i>Bandjarmasin hitam</i> × <i>Glagah Kependjen</i>) . .	136	" "	
	<u>2</u>		
#581 × <i>Glagah Soekapoera</i> 2	123-124	" "	
	<u>2</u>		
K 1525 × <i>Glagah Soekapoera</i> 2	123-124	" "	
	<u>2</u>		
11 K9 × <i>Glagah Soekapoera</i> 2	123-124	" "	
	<u>2</u>		
11 K23 × <i>Glagah Soekapoera</i> 2	123-124	" "	
	<u>2</u>		
11 K 45 × <i>Glagah Soekapoera</i> 2	123-124	" "	
	<u>2</u>		
<i>Suikerriet</i> × <i>Kassoer</i> :			
1807 POJ. (<i>Gestreept Prean-</i> <i>ger</i> × <i>Kassoer</i>)	147-148	" "	
	<u>2</u>		
2222 POJ. (<i>Zwart Cheribon</i> × <i>Kassoer</i>)	146	" "	
	<u>2</u>		
<i>Tjepiring</i> 136 <i>Zwart Cheri-</i> <i>bon</i> × <i>Kassoer</i>	150	" "	
	<u>2</u>		
2725 POJ (GK 28 × 2364 POJ.)	106-107	" "	
	<u>2</u>		
2878 POJ (GK 28 × 2364 POJ.)	119-120	" 1928c, d.	
	<u>2</u>		
2883 POJ. (GK 28 × 2364 POJ.)	114-115	" 1928c.	
	<u>2</u>		
2727 POJ. (2364 POJ × <i>S.</i> <i>officinarum</i> (<i>Batjan</i>)) . .	133-134	" "	
	<u>2</u>		

GRAMINEAE (continued)	n	2n
<i>Suikerriet</i> × <i>Kassoer</i> (continued)		
O 1744 (<i>Aräjoeno</i> × <i>Glagah</i> <i>Tabongo</i>)	$\frac{120}{2}$	BREMER, 1928b.
1001 P 1 (<i>Loethers</i> × <i>Glagah</i> <i>alas Soemberpoetih</i>)	$\frac{147-148}{2}$	" "
O 1743 (<i>Loethers</i> × <i>Glagah</i> <i>Tabongo</i>)	$\frac{139}{2}$	" "
15 N1 (<i>Naz Reunion</i> × <i>Gla-</i> <i>gah Tabongo</i>)	$\frac{151-152}{2}$	" "
G 92 (100 POJ. × <i>Glagah</i> <i>alas Troeno</i>)	$\frac{139}{2}$	" "
G 95 (100 POJ × <i>Glagah alas</i> <i>Troeno</i>)	$\frac{143-144}{2}$	" "
M 2601 (100 POJ. × <i>Glagah</i> <i>alas Kepandjen</i>)	$\frac{143-144}{2}$	" "
15 N5 (100 POJ. × <i>Glagah</i> <i>alas Kepandjen</i>)	$\frac{143-144}{2}$	" "
G 104 (<i>Gestreept Preanger</i> × <i>Glagah alas Troeno</i>)	$\frac{136}{2}$	BREMER, 1928c.
2358 POJ (<i>Lahaina</i> × G104)	$\frac{145}{2}$	" "
P 1206 (<i>Zwart Cheribon</i> × I 1086)	$\frac{152}{2}$	" "
2364 POJ (100 POJ. × <i>Kas-</i> <i>soer</i>)	$\frac{148}{2}$	" 1928c, d.
2323 POJ (100 POJ. × <i>Kas-</i> <i>soer</i>)	$\frac{150-152}{2}$	" 1928c.
2354 POJ (100 POJ. × <i>Kas-</i> <i>soer</i>)	$\frac{157}{2}$	" "
2765 POJ (<i>Kassoer</i> × EK ₂)	ca. $\frac{139}{2}$	" "

GRAMINEAE (continued)	n	2n	
<i>Suikerriet</i> × <i>Kassoer</i> (continued)			BREMER, 1928c.
2767 POJ (<i>Kassoer</i> × EK ₂)	133-134		
	$\frac{2}{2}$		
2784 POJ (<i>Kassoer</i> × EK ₂)	138		" "
	$\frac{2}{2}$		
2786 POJ. (<i>Kassoer</i> × <i>Ba-</i> <i>tjan</i>)	144		" "
	$\frac{2}{2}$		
2789 POJ. (2029 POJ. × 247 B)	126-128		" "
	$\frac{2}{2}$		
P 1238 (I 1081 × DIJ2) . .	129		" "
	$\frac{2}{2}$		
P 1233 (I 1081 × <i>Bandjer-</i> <i>masin hitam</i>)	124-125		" "
	$\frac{2}{2}$		
557 M5 (#581 × <i>Loethers</i>) .	118		" "
	$\frac{2}{2}$		
1007 P ₂ (I 1081 × <i>Loethers</i>)	116-117		" "
	$\frac{2}{2}$		
2714 POJ (2364 POJ × EK 28)	114-116 ¹⁾		" "
	$\frac{2}{2}$		
2722 POJ (2364 POJ × EK 28)	108		" "
	$\frac{2}{2}$		
2875 POJ. (2364 POJ × EK 28)	110		" "
	$\frac{2}{2}$		
2836 POJ (2364 POJ × <i>Ar-</i> <i>djoeno</i>)	112		" "
	$\frac{2}{2}$		
2934 POJ (2364 POJ × Sw 111)	ca. 116		" "
	$\frac{2}{2}$		
2738 POJ (1808 POJ × <i>Fidji</i> 1808) ²⁾	130-131		" "
	$\frac{2}{2}$		
2782 POJ (2194 POJ ³⁾ × <i>Sampang A</i>)	ca. 133		" "
	$\frac{2}{2}$		

¹⁾ This was very abnormal in division.

²⁾ 1808 Poj is *Gestreept Preanger* × *Kassoer*.

³⁾ 2194 Poj is *Zwart Cheribon* × *Kassoer*.

GRAMINEAE (continued)	n	2n	
<i>Suikerriet</i> × <i>Kassoer</i> (continued)			
M 602 (2194 POJ. × SW ₃) .	ca. $\frac{130}{2}$		BREMER, 1928c.
M 664 (2194 POJ × EK ₂) .	ca. $\frac{128}{2}$		" "
10 P ₂ (722 POJ × <i>Glagah</i> <i>alas Troeno</i>)	$\frac{162}{2}$		" "
1228 P ₃ (2875 POJ × <i>Glagah</i> <i>alas Kloet</i>)	$\frac{87-88}{2}$		" "
113 P ₁ (Zwart Borneo × 11 K ¹⁾)	$\frac{140}{2}$		" "
2722 POJ × 11 K.	$\frac{113-114}{2}$		" "
2722 POJ	$\frac{108}{2}$		" "
1760 I (2722 POJ × 11 K) .	$\frac{166}{2}$		" "
01738 (2722 POJ × 11 K) .	$\frac{118}{2}$		" "
01728 (2722 POJ × H 585) .	$\frac{65-70}{2}$		" "
0729 (277 POJ × H 585) .	$\frac{128}{2}$		" "
01718 (2836 POJ × I 1080)	$\frac{123-124}{2}$		" "
<i>Glagah Tabongo</i> × <i>Glagah Ta-</i> <i>bongo</i> ²⁾	48-56		" "
<i>Avena abyssinica</i>	14	28	STANTON & DORSEY, 1927.
" <i>barbata</i>	7		KIHARA, 1924; GOULDEN, 1926.
	14		KIHARA, 1919b, 1924; DORSEY, E., 1925.
	14	28	HUSKINS, 1926, 1927b ³⁾ .
		32	NIKOLAWEA, 1922b.
" <i>brevis</i>		14	NIKOLAWEA, 1922b, 1923.
	7		GOULDEN, 1926.
	7	14	HUSKINS, 1926, 1927b.
" <i>brevis</i> ROTH.	7		AASE & POWERS, 1926.
" <i>byzantina</i>	21		KIHARA, 1919b, 1924.

¹⁾ 11 K is H 581 × *Glagah Soekapoera* 2.

²⁾ In 1923 from these crosses several giant plants with 48—56 chromosomes were produced. In 1924 the cross produced only 2 giants and one had 42 chromosomes.

³⁾ The form studied by HUSKINS (1927b) was *Avena barbata*, Cornell strain.

GRAMINEAE (continued)	n	2n	
<i>Avena</i> (continued)			
	21	42	HUSKINS, 1927b.
		44	NIKOLAWEA, 1922b, 1923.
<i>Avena clauda</i>		14	NIKOLAWEA, 1922b, 1923.
" <i>fatua</i>	21		KIHARA, 1919b, 1924; HUSKINS 1925; DORSEY, E., 1925; STOLZE 1925.
	21	42	HUSKINS, 1927b; GOULDEN, 1926.
		48	NIKOLAWEA, 1922b, 1923.
" <i>fatua</i> A.	21		HUSKINS, 1926.
" <i>ludowiciana</i>		44	NIKOLAWEA, 1922b, 1923.
	21	42	HUSKINS, 1926, 1927b.
" <i>nuda</i>	21	42	GOULDEN, 1926; HUSKINS, 1926, 1927b.
" <i>nuda briaristata</i>		14	NIKOLAWEA, 1922b, 1923.
" <i>nuda inermis</i>		48	" " "
" <i>pilosa</i>		14	" " "
" <i>sativa</i>	21		KIHARA, 1919b, 1924; HUSKINS 1925; WINGE, 1925.
	21	42	GOULDEN, 1926.
		48	NIKOLAWEA, 1922b.
		42-48	" 1923.
" <i>sativa</i> var. <i>Banner</i> . . .	21		HUSKINS, 1926.
	21	42	" 1927b.
" <i>sativa</i> var. <i>Gigantica</i> ¹⁾ .	21	42	" "
" <i>sativa</i> var. <i>Lincoln</i> . . .	21	42	" "
" <i>sativa</i> L. var. <i>Markton</i> .	21		AASE & POWERS, 1926.
" <i>sativa</i> var. <i>Orientalis</i> . .	21	42	HUSKINS, 1927b.
" <i>sativa</i> var. <i>Victory</i> . . .	21		" 1926.
	21	42	" 1927b.
" <i>sativa patula</i> var. <i>Aurea</i> KCKE.	21	42	STOLZE, 1925.
" <i>sativa</i> (dwarf)	21 ²⁾		GOULDEN, 1926.
" <i>sativa</i> (fatuoid)	21		HUSKINS, 1925; WINGE, 1925.
" <i>sativa</i> (fatuoid type 1 ³⁾)	21, 19 + 1 ₁ + 1 ₃ 19 + 1 ₄		" 1927a.

¹⁾ The form studied by HUSKINS (1927b) was *A. gigantea* (Cornell).

²⁾ A great deal of irregularity occurred in the heterotypic division (only occasional normal arrangement of chromosomes on the equatorial plate being observed) and no cells were found that were definitely undergoing a homoeotypic division.

³⁾ Types ¹⁾ and ²⁾ (HUSKINS, 1927a), gave rise to normals, heterozygotes and fatuoids with different arrangements of chromosomes as shown respectively in the list above. In Type ³⁾ normals and heterozygotes segregated most frequently, but rarely dwarf sterile fatuoids with 40 chromosomes appeared. In type four heterozygotes were more abundant.

GRAMINEAE (continued)	n	2n	
<i>Avena</i> (continued)			
<i>Avena sativa</i> (fatuid type 2) ¹⁾	21, 21+1		
	20+1 ₃ , 20+1 ₄		HUSKINS, 1927a.
" <i>sativa</i> (fatuid type 3)	21, 19+1 ₁ ,		
	40 ₁		" "
" (fatuid type 4)	41 ₁		" "
" <i>sativa</i> heterozygous fatu-			
oids F ₁ (normals) . . .	21	42	" 1927b.
" <i>sativa</i> heterozygous fa-			
tuids F ₁ (het. fatuids)	19+1 ₃ +1 ₁	42	" "
" <i>sativa</i> heterozygous fatu-			
oids F ₁ (hom. fatuids)	19+1 ₄	42	" "
" <i>sativa</i> Type 2 heterozy-			
gous fatuid	20+1 ₁	41	" "
" <i>sativa</i> Type 3 dwarf ho-			
mozygous fatuids . .	40		" "
" <i>sativa</i> Type 3 heterozy-			
gous fatuid	20+1 ₁	41	" "
" <i>sativa</i> Type 4 heterozy-			
gous fatuid	20+1 ₃ ,	43	" "
	21+1 ₁		
" <i>sativa</i> Type 4 homozy-			
gous fatuid	22,	44	" 1927a.
	20+1 ₄		
" <i>sativa</i> Type A heterozy-			
gous fatuids		42	" 1928c.
" <i>sativa</i> Type A homozy-			
gous fatuids		42	" "
" <i>sativa</i> Type A heterozy-			
gous fatuids (from Vic-			
tory Oats).	20+1 ₁	41	" "
" <i>sativa</i> Type B heterozy-			
gous fatuids		41	" "
" <i>sativa</i> Type C heterozy-			
gous fatuids		43, 44	" "
" — homozygous fatu-			
oids from vars. Banner			
Storm King, and Old			
Island	21 ²⁾	42	" 1926.
" — heterozygous fatu-			

¹⁾ See page 353 foot-note 3.

²⁾ Meiotic divisions were usually regular, but irregularities were found in a significantly large number of cases.

GRAMINEAE (continued)	n	2n	
<i>Avena</i> (continued)			
oids from vars. Banner and Victory	21 ¹⁾		HUSKINS, 1926.
<i>Avena sterilis</i>	21		KIHARA, 1919b, 1924.
	21	42	GOULDEN, 1926; HUSKINS, 1926 1927b.
		44	NIKOLAWEA, 1922b, 1923.
„ <i>strigosa</i>	7		KIHARA, 1919b, 1924; WINGE, 1925; GOULDEN, 1926.
	7	14	HUSKINS, 1926, 1927b.
		14	NIKOLAWEA, 1922b.
		14-16	„ 1923.
„ <i>stigosa</i> SCHREBER	7		AASE & POWERS, 1926.
„ <i>wiestii</i>	7		DORSEY, E., 1925.
„ <i>wiestii</i> STEUDEL	7		AASE & POWERS, 1926.
„ — „Stanton's Prolific Dwarf" ²⁾		42	GOULDEN, 1926.
<i>Arrhenatherum elatius</i> L. . . .	14		AASE & POWERS, 1926.
<i>Phragmites communis</i>	13		TISCHLER, 1918b.
„ <i>communis</i> var. <i>Pseudodonax</i>	16		„ „
FESTUCA ³⁾			
Section Montanae			
<i>Festuca montana</i> M. BIEB . .		14	LEVITSKY & KUZMINA, 1927.
Section Scariosae			
<i>Festuca granatensis</i> BOISS. (F. scariosa LAG.).		14	„ „ „ „
<i>Festuca Mairei</i> St.-Y.		28	„ „ „ „
Section Subbulbosae.			
<i>Festuca spadicea</i> L.		14	„ „ „ „
„ <i>triflora</i> DESF		14	„ „ „ „
<i>Festuca elatior</i> var. <i>arundinacea</i>		ca. 40	EVANS, 1926.
„ <i>elatior</i> L. subsp. <i>arundinacea</i> HACK. var. <i>genuina</i> HACK.		42	LEVITSKY & KUZMINA, 1927.
„ <i>elatior</i> L. subsp. <i>arundinacea</i> HACK. var. <i>Fenas</i> HACK. (glaucescens BOISS.) subvar. <i>corsica</i> HACK.		42	„ „ „ „

¹⁾ Irregularities of meiotic divisions occurred more frequently.

²⁾ This was obtained in the progeny of a selection from a cross between Aurora and Pringless Progress varieties of oats.

³⁾ Arrangement under sections is according to HACKEL and SAINT-YVES. For references see bibliography of LEVITSKY & KUZMINA, 1927.

GRAMINEAE (continued)	n	2n	
<i>Festuca</i> (continued)			
<i>Festuca elatior</i> L. subsp. <i>arundinacea</i> HACK var. <i>Le-tourneuxiana</i> St.-Y		70	LEVITSKY & KUZMINA, 1927.
subvar. <i>Pitardii</i> St.-Y.			
" <i>elatior</i> L. subsp. <i>arundinacea</i> HACK. var. <i>cirtensis</i> St.-Y. . . .		70	" " " "
" <i>elatior</i> var. <i>pratensis</i> .	7		EVANS, 1926.
" <i>elatior</i> var. <i>pratensis</i> subvar. <i>typica</i>		28	DE LITARDIÈRE, 1923a.
" <i>elatior</i> L. subsp. <i>pratensis</i> HACK. var. <i>genuina</i> HACK		14	LEVITSKY & KUZMINA, 1927.
" <i>gigantea</i> VILL.		42	" " " "
" <i>ovina</i> var. <i>Briquetii</i> subvar. <i>eu-Briquetii</i> .		28	DE LITARDIÈRE, 1923a.
" <i>ovina</i> var. <i>gallica</i> subvar. <i>Costei</i>		28	" " " "
" <i>ovina</i> var. <i>glauca</i> subvar. <i>eu-glauca</i>		28	" " " "
" <i>ovina</i> var. <i>tenuifolia</i> .		28	" " " "
" <i>ovina</i> var. <i>valesiaca</i> . .		28	" " " "
" <i>ovina</i> L. subsp. <i>eu-ovina</i> HACK. var. <i>capitata</i> HACK.		14	LEVITSKY & KUZMINA, 1927.
" <i>ovina</i> L. subsp. <i>eu-ovina</i> HACK. var. <i>vulgaris</i> KOCH. subvar. <i>pilifera</i> St.-Y.		14	" " " "
" <i>ovina</i> L. subsp. <i>eu-ovina</i> HACK. var. <i>duriuscula</i> KOCH. subvar. <i>genuina</i> KOCH.		42	" " " "
" <i>ovina</i> L. subsp. <i>Beckeri</i> HACK.		28	" " " "
" <i>ovina</i> L. subsp. <i>indigesta</i> HACK. var. <i>Litardierei</i> St.-Y.		70	" " " "
" <i>ovina</i> L. subsp. <i>sulcata</i> HACK. var. <i>Callieri</i> HACK. subvar. <i>conferta</i> St.-Y.		14	" " " "
" <i>ovina</i> L. subsp. <i>sulcata</i>			

GRAMINEAE (continued)	n	2n	
<i>Festuca</i> (continued)			
HACK. var. <i>valesiaca</i>			
Koch		42 and 14	LEVITSKY & KUZMINA, 1927,
<i>Festuca ovina</i> L. subsp. <i>sulcata</i>			
HACK. var. <i>Duvalii</i>			
St.-Y.		42	" " " "
" <i>rubra</i> L. subsp. <i>euru-</i>			
<i>bra</i> var. <i>genuina</i> HACK		56	" " " "
" <i>rubra</i> L. subsp. <i>hetero-</i>			
<i>phylla</i> HACK.		42	" " " "
" <i>rubra</i> L. subsp. <i>neva-</i>			
<i>densis</i> HACK. var. <i>Ha-</i>			
<i>ckelii</i> LIT. et MAIRE,			
subvar. <i>brevifolia</i> LIT			
et MAIRE		70	" " " "
" <i>spadicea</i> var. <i>genuina</i>			
subvar. <i>aurea</i>		28	DE LITARDIÈRE, 1923a.
" <i>varia</i> var. <i>eu-scoparia</i>			
subvar. <i>Kernerii</i> . . .		28	" " "
<i>Lolium linicola</i> SONDER (L. <i>re-</i>			
<i>motum</i> SCHRNK.) . . .		14	FAWORSKI, 1927.
" <i>perenne</i> L.		14	" "
" <i>perenne</i>	7		EVANS, 1926.
" <i>perenne</i> var. <i>multiflo-</i>			
<i>rum</i>	7		EVANS, 1926.
" <i>persicum</i> BOISS. . . .		14	FAWORSKI, 1927.
" <i>temulentum</i> L.		14	" "
" <i>perenne</i> × L. <i>perenne</i>			
var. <i>multiflorum</i> . . .	7 ¹⁾		EVANS, 1926.
<i>Secale africanum</i> STAPP. . . .		14, 15	EMME, 1927.
" <i>cereale</i>	7	15-16 ²⁾	" 1928.
" <i>cereale</i> L.		14	NIKOLAWEA, 1924.
" <i>cereale</i> L.		12	NĚMEC, 1910a.
	6		(WESTGATE) given by EAST,
			1915.
	8		NAKAO, 1911.
	7		SAKANURA, 1918; FERRAND,
			1923.
	7, 8		GOTOH, 1924; BELLING, 1925a.
" <i>cereale</i> L. var. <i>Rosen.</i> . .	7		DORSEY, E., 1925; AASE & POW-
			ERS, 1926.

¹⁾ Lagging chromosomes were occasionally found in the divisions of pollenmother cells.

²⁾ A nucleus with 23 chromosomes was also found.

GRAMINEAE (continued)	n	2n	
<i>Secale</i> (continued)			
<i>Secale cereale</i> L. (Winter Rye) .	7, 8	14, 16	KIHARA, 1924.
		14, 16	EMME, 1927.
" <i>cereale</i> L. (Summer Rye)	7, 8	14, 16	KIHARA, 1924.
		14, 16	EMME, 1927.
" <i>cereale</i> L. var. <i>Afghanicum</i> . VAV.		14, 15, 16	" "
		14, 16 ¹⁾	" 1928.
" <i>cereale</i> L. var. <i>Afghanicum</i> VAV. # 3046 . . .		14	" "
" <i>cereale</i> L. var. <i>eligulatum</i> VAV.		14, 16	" 1927.
" <i>cereale</i> L. var. <i>eligulatum</i> VAV. # 624		14	" 1928.
" <i>cereale</i> var. <i>Prolific</i> . .	7		THOMPSON, 1926a.
" <i>cereale</i> L. var. <i>vulgare</i> .	7	14	STOLZE, 1925.
" <i>cereale</i> L. var. <i>vulgare</i> KÖRN, ²⁾	7	14	EMME, 1928.
" <i>cereale</i> L.), „nichtzerbrechlicher var.")		14	" "
" <i>cereale</i> L. (halbzerbrechlicher var.)	7	14	EMME, 1928.
" <i>cereale</i> (#3193 from Afghanistan) („halbzerbrechlicher var.).	7	14	" "
" <i>fragile</i> M.B.	7, 8	14, 16	" 1927, 1928.
" <i>montanum</i> Guss.	(6-) 7	14	STOLZE, 1925.
		14, 16 ³⁾	EMME, 1927.
" <i>montanum</i> Guss. s.l. . .	7, 8	14, 16	" 1928.
<i>Triticum acuminatum</i> KAJ. . .		28	KAJANUS, 1927.
" <i>aegilipoides</i> LINK. .		14	STOLZE, 1925.
" <i>aegilipoides boeoticum</i>	7	14	KIHARA, 1924.
	7		PERCIVAL, 1926; MICZYNSKI, 1927.
" <i>aegilipoides</i> var. <i>Larionowi</i>	7		PERCIVAL, 1926; MICZYNSKI, 1927.
" <i>albidum</i>		42	SAPEHIN, 1927.
" <i>compactum</i>	8		NAKAO, 1911.
	21		SAX, 1921, 1928; BLEIER, 1926

¹⁾ In a few cells, only 15 chromosomes were counted.

²⁾ Three forms, winter, summer, and self-pollinated rye, from HERIBERT NILSON, were all found to have 14 chromosomes.

³⁾ Syndiploid plates with 29 and 42 chromosomes were found in the perilem and epidermis of this species.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> (continued)			
		42	SAKAMURA, 1918; DE MOL, 1924
	21	42	KIHARA, 1924.
		50	NIKOLAIEWA, 1922a.
		44	" 1923.
<i>Triticum compactum</i> Host. . .	21		KATAYAMA, 1928.
		42	WATKINS, 1928.
" <i>compactum</i> var. <i>albiceps</i> KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
" <i>compactum</i> var. <i>creticum</i> MAZZ. ¹⁾	21		" " " "
" <i>compactum</i> var. <i>erinaceum</i>	21		PERCIVAL, 1926.
" <i>compactum</i> var. <i>Fetisowi</i> KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
" <i>compactum</i> Host. var. <i>Humboldtii</i> KÖRN. (Wash. hybrid #143)		42	SAX, 1922; SAX & GAINES, 1924.
" <i>compactum</i> Host. (Hybrid 128)	21		AASE & POWERS, 1926.
" <i>compactum</i> <i>Humboldtii</i> KCKE. (Hybrid 128)	21	42	GAINES & AASE, 1926.
" <i>compactum</i> <i>Humboldtii</i> KCKE.	$\frac{21_1}{2}$	21	GAINES & AASE, 1926.
" <i>compactum</i> var. <i>Komaba</i> No. I & II . .		42	KAGAWA, 1926-7.
" <i>compactum</i> Host. var. <i>splendens</i>	8		KOERNICKE, 1896.
" <i>dicoccum</i>		28	SAKAMURA, 1918; DE MOL, 1924; KAGAWA, 1926-7, 1927; NIKOLAIEWA, 1922a 1923; SAX, 1922.
	14		SAX, 1921, 1928.
	14	28	KIHARA, 1924.
" <i>dicoccum</i> SCHÜBL. . .	14		KATAYAMA, 1928.
		28	WATKINS, 1928.
" <i>dicoccum</i> var. <i>Ajar</i> ²⁾ . .	14		PERCIVAL, 1926; MICZYNSKI, 1927.
	7		
" <i>dicoccum</i> var. <i>atratum</i> . .	14		MICZYNSKI, 1927.

¹⁾ Two different races of this variety were used, #2840 and #2841.

²⁾ According to MICZYNSKI (1927), this variety, from three different sources, gave the same number.

GRAMINEAE (continued)	n	2n
<i>Triticum</i> (continued)		
„ <i>dicoccum</i> SCHR. var.		
<i>Black Winter Emmer</i>	14	AASE & POWERS, 1926.
„ <i>dicoccum</i> var. <i>farrum</i>	14	PERCIVAL, 1926; MICZYNSKI, 1927.
„ <i>dicoccum</i> var. <i>farrum</i>		
f. <i>abyssinicum</i> . . .	14	VAVILOV & JAKUSHKINA, 1925.
„ <i>dicoccum</i> var. <i>farrum</i>		
f. <i>vianicum</i> VAV. . .	14	„ „ „ „
„ <i>dicoccum</i> var. <i>farrum</i>		
f. <i>wolgense</i> FLAKSB ¹).	14	„ „ „ „
„ <i>dicoccum pycnurum</i> .	14	MICZYNSKI, 1927.
„ <i>dicoccum pycnurum</i> AL.	14	VAVILOV & JAKUSHKINA, 1925.
„ <i>dicoccum rufum</i> ²) . .	14	MICZYNSKI, 1927.
„ <i>dicoccum uncinatum</i> .	14	„ „
„ <i>dicoccum vulpinum</i> .	14	„ „
(„ <i>polonicum</i> × <i>T. vulgare</i> F ₂) = <i>T. dicoccum</i>	28	MALINOWSKI (1926), 1929.
„ <i>dicoccoides</i>	14	28 KIHARA, 1924.
	7	DE MOL, 1924 ³).
	14	BLEIER, 1926; TSCHERMAK & BLEIER, 1926.
„ <i>dicoccoides</i> KÖRN. . .	14	AASE & POWERS, 1926.
„ <i>dicoccoides</i> var. <i>Aaronsohni</i>	14	PERCIVAL, 1926.
	28	WATKINS, 1928.
„ <i>dicoccoides</i> KÖRN. var. <i>Aaronsohni</i> FLAKSB.	28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ <i>dicoccoides</i> KOTSCHY. var. <i>Aaronsohni</i> . .	14	STOLZE, 1925.
„ <i>dicoccoides</i> var. <i>fulvovillosum</i> KÖRN. . .	14	VAVILOV & JAKUSHKINA, 1925.
„ <i>dicoccoides</i> var. <i>fulvovillosum</i> PERC. . . .	28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ <i>dicoccoides</i> var. <i>Kotschyanum</i> SCHULZ. .	28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.

¹) Three different races of this variety were used, #131, #2992, and L 2.

²) See page 359 foot-note 2.

³) Spikelets of the material used by DE MOL (1924) for which he gave $n = 7$ were re-examined by FLAKSBERGER (1928) and found to belong to *Triticum dicoccoides*.

GRAMINEAE (continued)	n	2n
<i>Triticum</i> (continued)		
<i>Triticum dicoccoides</i> var. <i>spontaneonigrum</i>	14	PERCIVAL, 1926; MICZYNEKI, 1927.
" <i>dicoccoides</i> var. <i>spontaneonigrum</i> FLAKSB		28 (SVESHNIKOVA), given by FLAKSBERGER, 1928.
" <i>dicoccoides</i> var. <i>spontaneovillosum</i>	14	MICZYNSKI, 1927.
" <i>dicoccoides</i> var. <i>Timopheevi</i> ZHUK. . . .		28 (SVESHNIKOVA), given by FLAKSBERGER, 1928.
" <i>dicoccoides</i> var. (?)	14	MICZYNSKI, 1927.
" <i>durum</i> ¹⁾		28 SAKAMURA, 1918; DE MOL, 1924; NIKOLAWEA, 1922a; KAGAWA, 1926-27.
	14	BLEIER, 1926; TSCHERMAK & BLEIER, 1926; KAGAWA, 1928; SAX, 1922, 1923, 1928; NIKOLAWEA, 1923.
	14	28 SAX, 1921; KIHARA, 1924; WATKINS, 1924.
" <i>durum</i> DESF.	14	KATAYAMA, 1928.
" <i>durum</i> var. <i>affine</i>	14	28 WATKINS, 1928.
" <i>durum</i> <i>aglossicon</i>	14	PERCIVAL, 1926.
" <i>durum</i> var. <i>australe</i>	14	FLAKSBERGER, 1926.
" <i>durum</i> DESF. <i>Blé dure de Médéah</i>		28 PERCIVAL, 1926.
" <i>durum</i> var. <i>hordeiforme</i>	14	KAGAWA 1928.
" <i>durum</i> var. <i>hordeiforme</i> Host. ²⁾	14	PERCIVAL, 1926.
" DESF. var. <i>hordeiforme</i> KÖRN. (<i>Kubanka</i>)		28 VAVILOV & JAKUSHKINA, 1925.
" <i>durum</i> DESF. var. <i>Kubanka</i>	14	28 SAX, 1918, 1922; SAX & GAINES, 1924.
" <i>durum</i> <i>leucurum</i>	14	AASE & POWERS, 1926.
" <i>durum</i> var. <i>libicum</i> KÖRN.	14	-MICZYNSKI, 1927. .
		VAVILOV & JAKUSHKINA, 1925.

¹⁾ WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum*, and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare* agree with those of SAKAMURA and SAX.

²⁾ Three different races of this variety were used, #432, #2802 and Y₁.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> (continued)			
<i>Triticum durum</i> var. <i>melanopus</i>			
AL.	14		VAVILOV & JAKUSHKINA, 1925.
" <i>durum</i> var. <i>Reichen- bachii</i> . KÖRN. . . .	14		" " " "
" <i>polonicum</i> × <i>T. vul- gare</i> F ₂) = <i>T. durum</i>		28	MALINOWSKI (1926), 1929.
" <i>erythrospermum</i> . . .		42	SAPEHIN, 1927.
" <i>ferrugineum</i>		42	" "
" <i>ferrugineum sibiricum</i>		42	" "
" <i>lutescens</i>		42	" "
" <i>militurum</i>		42 ¹⁾	" "
" <i>monococcum</i>	8		PERCIVAL, 1921.
		14	SAKAMURA, 1918; DE MOL, 1924; NIKOLAEWA, 1922a, 1923; KAGAWA, 1926, 1927.
	7	14	KIHARA, 1924.
	7		SAX, 1921, 1928; THOMPSON, 1926b; BLEIER, 1926.
" <i>monococcum</i> L. . . .	7		AASE & POWERS, 1926; KATAY- AMA, 1928.
		14	KAJANUS, 1927.
" <i>monococcum</i> var. <i>fla- vescens</i> ²⁾	7		PERCIVAL, 1926; MICZYNSKI, 1927.
" <i>monococcum</i> var. <i>fla- vescens</i> KÖRN. ³⁾ . .	7		VAVILOV & JAKUSHKINA, 1925.
" <i>monococcum</i> <i>Horne- mannii</i>	7		MICZYNSKI, 1927.
" <i>monococcum</i> var. <i>Hor- nemanni</i> KÖRN. . .	7	14	SAX, 1922.
" <i>monococcum</i> var. <i>Hor- nemanni</i> CLEM. . .	7		VAVILOV & JAKUSHKINA, 1925.
" <i>monococcum</i> <i>Komaba</i> No. I.		14	KAGAWA, 1926-7.
" <i>monococcum</i> <i>Petite</i> <i>Epeautre</i>		14	KAGAWA, 1926-7.
" <i>monococcum</i> var. <i>vul- gare</i>	7		PERCIVAL, 1926.
" <i>monococcum</i> var. <i>vul- gare</i> KÖRN.	7		VAVILOV & JAKUSHKINA, 1925.

¹⁾ *T. militurum* had as a rule abnormal nuclear division.

²⁾ According to MICZYNSKI (1927) this variety from two different sources gave the same number of chromosomes.

³⁾ Two different races of this variety were used, #81 and #138.

GRAMINEAE(continued)	n	2n	
<i>Triticum</i> (continued)			
<i>Triticum obtusatum</i> KAJ. . . .		28	KAJANUS, 1927.
" <i>orientale</i> PERC. . . .	14		BLEIER, 1926.
		28	NIKOLAWEA, 1923; WATKINS, 1925.
" <i>orientale</i> var. <i>notabile</i> .	14		PERCIVAL, 1926.
" <i>persicum</i>	14	28	(DELAUNAY, 1925) given by VAVILOV & JAKUSHKINA, 1925; (NIKOLAWEA) given by VAVILOV & JAKUSHKINA, 1925.
		28	(NIKOLAWEA) given by ATABEKOR, 1925; NIKOLAWEA, 1923; WATKINS, 1925.
	14		BLEIER, 1926; VAVILOV & JAKUSHKINA, 1925.
" <i>persicum</i> (Black Persian)	14		THOMPSON, 1927.
" <i>persicum</i> VAV. var. <i>coeruleum</i> ZHUK. . .		28	ZHUKOVSKI, 1923.
" <i>persicum</i> VAV. var. <i>iginosum</i> ZHUK. . .		28	" "
" <i>persicum</i> VAV. var. <i>rubiginosum</i> ZHUK. .		28	" "
" <i>persicum</i> VAV. var. <i>stramineum</i> ZHUK. . .		28	" "
" <i>polonicum</i> ¹⁾		28	SAKAMURA, 1918; NIKOLAWEA, 1922a, 1923; DE MOL, 1924; KAGAWA, 1927.
	14		SAX, 1921, 1923, 1925; WATKINS, 1924; BLEIER, 1926.
	14	28	KIHARA, 1924.
" <i>polonicum</i> L.	14		KATAYAMA, 1925.
		28	WATKINS, 1925.
" <i>polonicum</i> var. <i>Komaba</i> 2		28	KAGAWA, 1926-7.
" <i>polonicum</i> var. <i>levisimum</i>	14		PERCIVAL, 1926.
" <i>polonicum</i> var. <i>nigrobarbatum</i> KÖRN. . .	14		VAVILOV & JAKUSHKINA, 1925.
" <i>polonicum</i> var. <i>villosum</i> KÖRN.	14	28	" " "

¹⁾ WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum*, and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare*, agree with those of SAKAMURA & SAX.

GRAMINEAE (continued)	n	2n
<i>Triticum</i> (continued)		
<i>Triticum polonicum</i> L. <i>villosum</i>		
KÖRN.	14	28 SAX, 1922; SAX & GAINES, 1924
" <i>pseudocianum</i>		42 ¹⁾ SAPEHIN, 1927.
" <i>pyramidale</i> PERC. . .	14	BLEIER, 1926.
" <i>pyramidale</i> var. <i>re-</i> <i>cognitum</i>	14	28 WATKINS, 1928.
" <i>pyramidale</i> <i>recogni-</i> <i>tum</i> (White Saidi) . .	14	PERCIVAL, 1926.
" <i>spelta</i>		42 MICZYNSKI, 1927.
		DE MOL, 1924; KAGAWA, 1926
	21	-7.
		SAX, 1922, 1928.
		44 NIKOLAWEA, 1922a.
		44-50 " 1923.
	21	42 KIHARA, 1924.
" <i>spelta</i> L.		42 WATKINS, 1928.
" <i>spelta</i> var. <i>album</i> . .	21	PERCIVAL, 1926; MICZYNSKI,
		1927.
" <i>spelta</i> var. <i>album</i> AL. ²⁾	21	VAVILOV & JAKUSHKINA, 1925;
		STOLZE 1925.
" <i>spelta</i> L. var. <i>Al-</i> <i>stroum</i>	21	AASE & POWERS, 1926.
" <i>spelta</i> var. <i>Arduinii</i> Mazz.	21	VAVILOV & JAKUSHKINA, 1925.
" <i>spelta</i> L. var. <i>Bearded</i> <i>Spelt</i>	21	AASE & POWERS, 1926.
" <i>spelta</i> <i>coeruleum</i> . . .	21	MICZYNSKI, 1927.
" <i>spelta</i> var. <i>coeruleum</i> AL.	21	VAVILOV & JAKUSHKINA, 1925.
" <i>spelta</i> var. <i>Schenki</i> KÖRN.	21	" " " "
" <i>spelta</i> L. var. <i>White</i> <i>Spring Belt</i>	21	AASE & POWERS, 1926.
(,, <i>dicoccum</i> × <i>T. vulga-</i> <i>re</i> F ₂) = <i>T. spelta</i> . .		42 MALINOWSKI (1926), 1929.
(,, <i>polonicum</i> × <i>T. vul-</i> <i>gare</i> F ₂) = <i>T. spelta</i> . .		42 " " "
" <i>sphaerococcum</i> PER- CIV.		42 WATKINS, 1928 ¹
" <i>sphaerococcum</i> var. <i>tumidum</i>	21	PERCIVAL, 1926.

¹⁾ Of a number of soft wheats studied *T. pseudocianum* showed the highest percentage (1 %) of abnormalities in division (1 or 2 univalents).

²⁾ Two different races of this variety were used. #123 and #3367.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> (continued)			
<i>Triticum Thandar</i> REUT.			(SHEPELJEVA), given by FLAKS- BERGER, 1926.
„ <i>turgidum</i> ¹⁾		28	SAKAMURA, 1918; NIKOLAWEA, 1922a, 1923; DE MOL, 1924.
	14		SAX, 1921, 1928; BLEIER, 1926.
	14	28	KIHARA, 1924; WATKINS, 1924.
„ <i>turgidum</i> L.		24	WATKINS, 1928.
„ <i>turgidum</i> L. var. <i>Alaska</i>	14		AASE & POWERS, 1926.
„ <i>turgidum</i> var. <i>buccale</i>	14		THOMPSON, 1926b.
„ <i>turgidum dinurum</i> (Rivet)	14		MICZYNSKI, 1927.
„ <i>turgidum</i> var. <i>Rivet</i>	14		WATKINS, 1927b.
„ <i>turgidum gentile</i>	14		PERCIVAL, 1926.
„ <i>turgidum</i> var. <i>iodurum</i> KÖRN. (Rivet)		28	WATKINS, 1925.
„ <i>turgidum</i> var. <i>iodurum</i>	14		KAGAWA, 1926-7.
„ <i>turgidum iodurum</i> (Blue Cone)	14		MICZYNSKI, 1927.
„ <i>turgidum</i> var. <i>Komaba</i> No. I	14		KAGAWA, 1927-6.
„ <i>turgidum</i> var. <i>lusitanicum</i>	14		PERCIVAL, 1926.
„ <i>turgidum</i> var. <i>lusitanicum</i> KÖRN. ²⁾	14		VAVILOV & JAKUSHKINA, 1925.
„ <i>turgidum</i> var. <i>Plinianum</i> KÖRN.	14		„ „ „ „
„ <i>turgidum</i> L. var. <i>pseudocervinum</i> KÖRN. (Alaska)		28	SAX, 1922; SAX & GAINES, 1924
„ <i>villosum</i>	7		BLEIER, 1928b.
„ <i>vulgare</i> ¹⁾	6		GOLINSKI, 1893; KOENICKE, 1896; NAKAO, 1911; BALLY, 1912, 1919; (DUDLEY), given by EAST, 1915; PERCIVAL, 1921.
	8	16	OVERTON, 1893a, b.

¹⁾ WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum* and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare* agree with those of SAKAMURA and SAX.

²⁾ Two different races of this variety were used, #3326 and #3362.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> (continued)			
	21	42	SAKAMURA, 1918; KIHARA, 1924; (NIKOLAWEA), given by VAVILOV & JAKUSHKINA, 1925.
	21		DE MOL, 1924; SAX, 1921, 1922, 1928; BLEIER, 1926; WATKINS, 1924.
		42	KAGAWA, 1926-7, 1927.
		42-44	NIKOLAWEA, 1923.
<i>Triticum vulgare</i> (25 forms) . .	21		PERCIVAL, 1926.
„ <i>vulgare</i> Host. . . .	21		KATAYAMA, 1921.
		42	WATKINS, 1928.
„ <i>vulgare albidum</i> (Starling)	21		MICZYNSKI, 1927.
„ <i>vulgare</i> VILL. var. <i>albidum</i> KÖRN. (Amby)		42	SAX & GAINES, 1924.
„ <i>vulgare</i> var. <i>albidum</i> KÖRN.	21		THOMPSON, 1926a.
„ <i>vulgare</i> var. <i>albidum</i> KÖRN. (Swedish Iron)		42	WATKINS, 1925.
„ <i>vulgare</i> „Chul”. . . .	21		THOMPSON, 1928.
„ <i>vulgare</i> VILL. var. <i>Bluestem</i>	21		AASE & POWERS, 1926.
„ <i>vulgare</i> var. <i>erythroleucum</i> KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
„ <i>vulgare</i> var. <i>erythrospermum</i> KÖRN. ¹⁾ . .	21		VAVILOV & JAKUSHKINA, 1925.
		42	ZHUKOVSKII, 1923; NIKOLAWEA, 1924.
„ <i>vulgare erythrospermum</i> (Ribeiro) . . .	21		MICZYNSKI, 1927.
„ <i>vulgare erythrospermum</i> (Usher's Red).	21		„ „
„ <i>vulgare ferrugineum</i> (Molawska)	21		„ „
„ <i>vulgare</i> var. <i>ferrugineum</i> AL. ²⁾	21		VAVILOV & JAKUSHKINA, 1925.
„ <i>vulgare</i> var. <i>fuligonomum</i> Alpaca ³⁾	21		„ „ „ „
„ <i>vulgare Horogi</i> VAV. . .	21		„ „ „ „

¹⁾ Five different races of this variety were used, #2386, #2823, #3379, #3381 and A-139. (VAVILOV & JAKUSHKINA, 1925).

²⁾ Three different races of this variety were used, #5, #127, and #2406.

³⁾ Four different races of this variety were used, I, II, IV and (O E.).

GRAMINEAE (continued)	n	2n
<i>Triticum</i> (continued)		
<i>Triticum vulgare</i> Host. Koma-		
maba 3	21	KAGAWA, 1928.
" <i>vulgare</i> VILL. var.		
Hussar	21	AASE & POWERS, 1926.
" <i>vulgare lutescens</i> AL. ¹⁾	21	VAVILOV & JAKUSHKINA, 1925.
" <i>vulgare lutescens</i>		
KÖRN. (Marquis) . .	42	SAX, 1922; SAX & SAX, 1924; SAX & GAINES, 1924.
" <i>vulgare lutescens</i>		
KÖRN. (Yeomen) .	42	WATKINS, 1925.
" <i>vulgare lutescens</i>		
(Trump)	21	MICZYNSKI, 1925.
" <i>vulgare</i> , Marquis		
(dwarf)	20	THOMPSON, 1922.
" <i>vulgare</i> VILL. var.		
Martin	21	AASE & POWERS, 1926.
" <i>vulgare meridionale</i> .	21	MICZYNSKI, 1927.
" <i>vulgare militurum</i>		
(Dividenden) . . .	21	" "
" <i>vulgare militurum</i>		
(Standard Red) . .	21	" "
" <i>vulgare</i> „Pusa 12” .	21	THOMPSON, 1928.
" <i>vulgare pyrothrix</i> (Hal-		
let Imp. Pedigree) .	21	MICZYNSKI, 1927.
" <i>vulgare</i> VILL. var. Ri-		
dit	21	AASE & POWERS, 1926.
" <i>vulgare</i> var. Swedish		
Iron	21	WATKINS, 1927b.
" <i>vulgare</i> VILL. var.		
Triplet	21	AASE & POWERS, 1926.
" <i>vulgare Utsunomiya</i>		
Agr. Coll. No. I. . .	21	KAGAWA, 1928.
" <i>vulgare</i> var. Yeoman .	21	WATKINS, 1927b.
" Speltoids:		
Type A heterozygous spel-		
toids	19+1 ₁ +1 ₃	42 HUSKINS, 1928a.
Type A homozygous spel-		
toids	19+1 ₄	42 " "
Type B heterozygous spel-		
toids	20+1 ₁	41 " "
		41 " 1928b

¹⁾ Two different races of this variety were used, #188 and #2718.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> (continued):			
Type B homozygous spel-			
toids		40	HUSKINS, 1928a.
Type B homozygous spel-			
toids	20+1 ₁	41	" "
	or 19+1 ₃	41	" 1928b.
Type C heterozygous spel-			
toids	20+1 ₃	43	" 1928a.
		43	" 1928b.
Type C homozygous spel-			
toids		44	" 1928, 1928b.
<i>Triticum</i> Hybrids:			
" <i>aegilipoides boeoticum</i>			
× <i>T. dicoccum</i> . .	$7 + \frac{1_1}{2}$		KIHARA & NISHIYAMA, 1928.
	$1_3-3_3+6,4,3,$		
	$+6_1,7_1$		
	$\frac{2}{2}$		
" <i>dicoccum</i> × <i>T. mon-</i>			
<i>ococcum</i>	$7 + \frac{1_1}{2}$		
	$1_3-3_3+6,4^1),$		
	$3+6_1,7_1$		" " "
	$\frac{2}{2}$		
" <i>dicoccum</i> × <i>T. vulga-</i>			
<i>re</i> (spelta type) . .		42	MALINOWSKI, 1925; (1926)
			1929.
" <i>dicoccum</i> SCHÜBL. ×			
<i>T. vulgare</i> Host. F ₂		28, 42 ²⁾	MALINOWSKI, 1926.
" <i>dicoccum</i> var. <i>farrum</i>			
× <i>T. vulgare</i> var.			
Marquis F ₂ ³⁾ . .	$14 + 0_1-4_1$		
	$\frac{2}{2}$		THOMPSON & HOLLIGSHEAD,
	15-17		1927.
	$15-17 + 6_1,4_1,3_1$		SAX, 1922.
	$\frac{2}{2}$		
" <i>durum</i> × <i>T. vulgare</i>			
	$14^4) + 7_1$		KIHARA & NISHIYAMA, 1928.
	$\frac{2}{2}$		

¹⁾ Sometimes a bi-bivalent (1₁₁ + 1₁₁), not a tetravalent, appeared in the complex.

²⁾ F₂ plants of the *dicoccum* type had 28, and those of the *vulgare* type had 42 chromosomes.

³⁾ Of 28 F₂ hybrids, 24 had 14 bivalents and were *dicoccum*-like and had 15-17 bivalents, and were intermediate in characters.

⁴⁾ Rarely 1-2 trivalents were seen.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> Hybrids (continued):			
<i>Triticum durum</i> × <i>T. vulgare</i> F ₁	14+ $\frac{7_1}{2}$	35	TOCHINAI & KIHARA, 1927.
" <i>durum</i> × <i>T. vulgare</i> F ₂		30, 31,	
		33, 37, 38,	" " "
" <i>durum</i> × <i>T. vulgare</i> F ₃		28, 29,	
		37, 39, 40	" " "
" <i>durum</i> × <i>T. vulgare</i> F ₄			
(<i>durum</i> type) . . .	14, 14+1 ₁		
	$\frac{14+2_1}{2}$		
	14+ $\frac{7_1}{2}$	28, 29	" " "
" <i>durum</i> × <i>T. vulgare</i> F ₄			
(<i>vulgare</i> type) . . .	16+2-3 ₁	34-37,	
	$\frac{2}{2}$	39, 41	
	19+1 ₁ ,		
	20+1 ₁	" " "	
" <i>durum</i> (Kubanka) ×			
{ <i>T. vulgare</i> (Mar-			
quis) × <i>T. durum</i>			
(Kubanka) F ₁ } . . .	14+0-5 ₁ , 7 ₁	28-33, SAX, 1928.	
	$\frac{2}{2}$	35	
" <i>monococcum</i> × <i>T. tur-</i>			
<i>gidum</i> var. <i>buccale</i> . . .	3-7+	THOMPSON, 1926b.	
	$\frac{7_1, 9_1, 11_1, 13_1, 15_1}{2}$		
" <i>monococcum</i> × <i>T. tur-</i>			
<i>gidum pseudocervi-</i>			
<i>num</i> KORN (Alaska)	7+ $\frac{7_1 14_1}{2}$	21	SAX, 1922.
" <i>persicum</i> (Black Per-			
sian) × <i>T. dicoccum</i> ¹⁾	14	THOMPSON, 1927.	
" <i>polonicum</i> × <i>T. spel-</i>			
<i>ta</i> ²⁾		40	KIHARA, 1924.
" <i>polonicum</i> × <i>T. spel-</i>			
<i>ta</i> F ₄		42, ca 42	TOCHINAI & KIHARA, 1927.
" <i>polonicum</i> × <i>T. vul-</i>			
<i>gare</i> F ₂ (<i>dicoccum</i>			
type)		28	MALINOWSKI, 1925, (1926), 1929.

¹⁾ Of the hybrid *Triticum persicum* × *T. vulgare*, THOMPSON (1927) says there were lagging chromosomes in the pentaploid forms.

²⁾ Two individuals (2-8-31) and (3-3-3-6) arose from this cross with 40 chromosomes that were dwarf and partially dwarf.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> Hybrids (Continued)			
<i>Triticum polonicum</i> × <i>T. vulgare</i> F ₂ (spelta type)		42	MALINOWSKI, 1925, (1926); 1929,
„ <i>polonicum</i> × <i>T. vulgare</i> F ₂ (durum type)		28	MALINOWSKI, (1926) 1929.
„ <i>polonicum</i> L. × <i>T. vulgare</i> Host. F ₃ ¹⁾		28	MALINOWSKI, 1926.
D _{2g} ²⁾ (<i>Triticum polonicum</i> × <i>T. spelta</i>) × <i>T. spelta</i>	20+1 ₁	41	NISHIYAMA, 1928a.
D _{2f} ²⁾ (<i>Triticum polonicum</i> × <i>T. spelta</i>) × <i>T. spelta</i> . . .	20+1 ₁	41	„ „
<i>Triticum spelta</i> × D _{2g} (<i>T. polonicum</i> × <i>T. spelta</i>)	20+1 ₁	41	NISHIYAMA, 1928a
„ <i>spelta</i> × D _{2f} (<i>T. polonicum</i> × <i>T. spelta</i>)	20+1 ₁	41	„ „
„ <i>spelta</i> × <i>T. monococcum</i> ³⁾	0.5+28 ₁ -18 ₁ 2		MELBURN & THOMPSON, 1927.
„ <i>spelta</i> × <i>T. aegilipoides boeoticum</i> . . .	7+14 ₁ , 2		
	10+8 ₁ ,13-33 2		KIHARA & NISHIYAMA, 1928
	+7, 5, 4, +11 ₁ ,14 ₁ ,15 ₁ , 2		
„ <i>turgidum</i> var. <i>buccale</i> × <i>T. dicoccum</i> . .	14		THOMPSON, 1926b.
„ <i>turgidum</i> × <i>T. compactum</i> F ₄		42, ca 42	TOCHINAI & KIHARA, 1927.
{ „ <i>turgidum</i> (Rivet) × <i>T. vulgare</i> (Iron) } × <i>T. turgidum</i> (Rivet)	14-21		WATKINS, 1927a.
„ <i>turgidum</i> (Rivet) × <i>T. vulgare</i> Swedish Iron or Yeoman) F ₂ . .			

¹⁾ Root-tips of plants of 4 types of the F₃ generation, i.e., *polonicum*-, *dicoccum* and *spelta*-like plants, showed 28 chromosomes.

²⁾ D_{2g} and D_{2f} refer to the dwarf plants obtained by KIHARA (1924) from *T. polonicum* and *T. spelta*.

³⁾ In the homoeotypic division 4-13 lagging chromosomes were seen.

GRAMINEAE (continued)	n	2n	
<i>Triticum</i> Hybrids (continued):			
Type 1 ¹⁾ round glumed <i>turgidum</i>	28		WATKINS, 1927b.
Type 2 <i>vulgare</i>	42		" "
Type 3. intermediate types			
1 and 2	28-42		" "
Type 4. heterozygous round glumed <i>turgidum</i>	28		" "
Type 5. heterozygous speltoid	42		" "
Type 6. intermediates between types 4 and 5 . . .	28-42		" "
Type 7. <i>turgidum</i>	28		" "
Type 8. <i>speltoid</i>	42		" "
Type 9. intermediates between types 7 and 8 . .	28-42		" "
{ <i>Triticum vulgare</i> (Marquis) × × <i>T. durum</i> (Kubanka) F ₁ } × <i>T. durum</i> (Kubanka) . .	$14 + \frac{0_1 - 6_1}{2}$	28-35 ²⁾	SAX, 1928.
" <i>vulgare</i> (Pusa 12 × Chul) F ₁	$19-20 + \frac{1_1 - 2_1}{2}$		THOMPSON, 1928.
" (Chul × Marquis) normal & dwarf . .	20+, 21+ ³⁾	42	GOULDEN, 1926.
" (Kota × Marquis) normal & dwarf . .	21 ⁴⁾	42	GOULDEN 1926.
" <i>vulgare</i> (Marquis) × <i>T. durum</i> Jumillo F ₂ ⁵⁾		14, 15, 16- 19, 20, 21	THOMPSON, 1925.
" „Marquillo” (Marquis × Jumillo)	14		ELDERS, 1927.

¹⁾ The *turgidum* and *vulgare* types were found not only to owe their differences to difference in chromosome number but to factor differences also.

²⁾ Only 4 of 151 plants had 35 chromosomes, while 71 plants had 28 chromosomes.

³⁾ Though no attempt was made to count the chromosomes in heterotypic plates, there was usually one lagging chromosome (2 in one case) present in both normal and dwarf plants.

⁴⁾ Most of the division figures showed no irregularities, but occasionally in dwarf plants, a cell showed a lagging chromosome.

⁵⁾ THOMPSON found in F₂ + F₃ some plants resembling *T. durum* and some like *T. vulgare* and some intermediate. The chromosome numbers corresponded to the types and forms with intermediate numbers and intermediate appearance tended to be eliminated in F₃.

GRAMINEAE (continued)	n	2n
<i>Triticum</i> Hybrids (Continued)		
<i>Triticum</i> „H-44-24” (Marquis × Yaroslav Emmer)	$28 \frac{1}{2}$	ELDERS, 1927.
(„ <i>vulgare militurum</i> 00274 × <i>T. durum</i> <i>melanopus</i> 00122)F ₂	$16 + 4 \frac{1}{2}$	SAPEHIN & SAPEHIN, 1925 ²).
(„ <i>vulgare militurum</i> 00274 × <i>T. durum</i> <i>melanopus</i> 00122)F ₆	$16 + 4 \frac{1}{2}$	„ „ „ „
(„ <i>vulgare militurum</i> 00274 × <i>T. durum</i> <i>melanopus</i> 00122)F ₇ ³	$5 + 14 \frac{1}{2}$ $16 + 10 \frac{1}{2}$	„ „ „ „
„ <i>vulgare militurum</i> 00274 × <i>T. durum</i> <i>melanopus</i> 00/22 (7 types)	21	SAPEHIN, 1928.
„ <i>vulgare militurum</i> 00274 × <i>T. durum</i> <i>melanopus</i> 00/22 (ty- pe 5)	$16 + 4 \frac{1}{2}$	„ „
„ <i>dicoccum</i> × (<i>T. vul-</i> <i>gare</i> 1 × <i>T. dicoccum</i>		
„ <i>durum</i> × (<i>T. vulgare</i> 1 × <i>T. durum</i> . . .		
„ <i>durum</i> × (<i>T. vulgare</i> 2 × <i>T. durum</i>) . . .	$7 + 1 \frac{1}{2} - 7 \frac{1}{2}$ ⁴	THOMPSON & CAMERON, 1928.
„ <i>vulgare</i> × (<i>T. vulgare</i>		

¹) Lagging chromosomes were found in the metaphase and anaphase stages of pollen-mother-cell division.

²) Of a number of crosses between forms of *Triticum albidum*, *T. erythrospermum*, *T. ferrugineum*, *T. lutescens*, *T. militurum* and *T. pseudocanicum*, only one cross of a form of *T. ferrugineum* and a form of *T. erythrospermum* showed 41 chromosomes. (SAPEHIN, 1927).

³) A second type showed no regular number of bivalents and univalents and division was very irregular.

⁴) In the gametes of these hybrids it was far more frequent to find 0 univalents than to find 7, and gametes with an intermediate number of univalents (1—6) were in much smaller proportion than expected.

GRAMINEAE (continued)		n	2n	
<i>Triticum</i> Hybrids (continued)				
1 × <i>T. durum</i> . . .				
<i>Triticum vulgare</i> × (<i>T. vulgare</i>				
1 × <i>T. dicoccoides</i>) .				
„ <i>vulgare</i> 2 × (<i>T. vulgare</i>				
2 × <i>T. durum</i>) .				
„ <i>vulgare</i> var. <i>albidum</i>				
KÖRN. × <i>Secale cereale</i> var. <i>Prolific</i> .	28 ¹⁾			THOMPSON, 1926a.
(„ <i>vulgare</i> var. <i>albidum</i>				
KÖRN. × <i>Secale cereale</i> var. <i>Prolific</i>)				
× <i>T. vulgare</i> var. <i>albidum</i> KÖRN. . . .	21 + $\frac{3_1}{2}$			„ „
„ <i>vulgare</i> var. <i>erythropermum</i> × <i>Secale cereale</i> F ₁		28		NIKOLAIEWA, 1924..
„ <i>vulgare</i> var. <i>erythropermum</i> × <i>Secale cereale</i> F ₂	42-44, 50 ²⁾			„ „
„ <i>vulgare</i> × <i>Aegilops ovata</i>	ca. 12			BALLY, 1919
„ <i>vulgare</i> var. <i>Red Has-sar</i> × <i>Aegilops cylindrica</i>	7 + $\frac{21_1}{2}$			GAINES & AASE, 1926.
„ <i>vulgare</i> (Komaba No. 3) × <i>Aegilops cylindrica</i> Host.	7 + $\frac{21_1}{2}$	36		KAGAWA, 1928.
„ <i>durum</i> (Ble' dur de Médéah) × <i>Aegilops ovata</i> L. F ₁		28		„ „
AEGILOPS ³⁾				
Section <i>Polyeides</i> ZHUK.				
<i>Aegilops biuncialis</i> Vis.	14			SOROKINA, 1928.
		28		SCHIEHMANN, 1928b.

¹⁾ Occasionally 25, 26 or 27 chromosomes were counted and then mating of 1, 2 and rarely 3 pairs took place. An F₂ plant showed 17 + 2₁ and an F₄ plant showed 17 chromosomes, among which no univalents were expected.

²⁾ One plant of 6 had 50 chromosomes in the root-tips and the remainder had 42—44.

³⁾ Arrangement under sections is according to „Berliner Herbar“.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
<i>Aegilops ovata</i>	16	32	BALLY, 1912, 1919.
	14		PERCIVAL, 1923; AASE & POWERS, 1926; TSCHERMAK & BLEIER, 1926; BLEIER, 1928b
			SAX, 1928, (1926) 1929.
	14	28	KIHARA, 1924; VAVILOV & JAKUSHKINA, 1925.
„ <i>ovata</i> L.	14		PERCIVAL, 1926.
	14	28	KAGAWA, 1928.
„ <i>ovata</i> var. <i>anatolica</i> .	7 ¹⁾	14	SCHIEHMANN, 1928a, b.
„ <i>ovata</i> ssp. <i>gibberosa</i> ZHUK.	14		SOROKINA, 1928.
„ <i>ovata</i> ssp. <i>planiuscula</i> ZHUK.	14		„ „
„ <i>ovata</i> var. <i>typica</i> . . .	14	28	SCHIEHMANN, 1928a, b.
„ <i>ovata</i> ssp. <i>umbonata</i> ZHUK.	14		SOROKINA, 1928.
„ <i>triaristata</i>		28, 42	SCHIEHMANN, 1928b.
„ <i>triaristata</i> ssp. <i>contorta</i> ZHUK.	14		SOROKINA, 1928.
„ <i>triaristata</i> ssp. <i>recta</i> ZHUK.	14		„ „
Section <i>Surculosa</i> ZHUK.			
<i>Aegilops triuncialis</i>	14		AASE & POWERS, 1926; SCHIEHMANN, 1928a.
	14	28	SCHIEHMANN, 1928b.
„ <i>triuncialis</i> L.	14		PERCIVAL, 1926; KAGAWA, 1928; VAVILOV & JAKUSHKINA, 1925.
		28	EMME, 1924.
„ <i>triuncialis</i> ssp. <i>brachyathera</i> BOISS.	14		SOROKINA, 1928.
„ <i>triuncialis</i> ssp. <i>Kotschyi</i> BOISS.	14		„ „
„ <i>triuncialis</i> ssp. <i>persica</i> (BOISS.) ZHUK.	14		„ „
„ <i>triuncialis</i> ssp. <i>typica</i> ZHUK.	14		„ „
Section <i>Cylindropyrum</i> (JAUB. et SP.) ZHUK.			
<i>Aegilops cylindrica</i>	7		PERCIVAL, 1923.
	14		SAX & SAX, 1924; GAINES &

¹⁾ This number was found in material from Angora as well as from Taurus.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
			AASE, 1926; SAX, 1928, (1926) 1929.
<i>Aegilops cylindrica</i> Host. . . .	14	28	SCHIEHMANN, 1928a, b.
			AASE & POWERS, 1926; BLEIER 1928b.
		28	EMME, 1924.
	14	28	KAGAWA, 1928.
„ <i>cylindrica</i> ssp. <i>aristulata</i> ZHUK.	14		SOROKINA, 1928.
Section <i>Vertebrata</i> ZHUK.			
<i>Aegilops squarrosa</i> ¹⁾		28	KIHARA, 1924.
	14		AASE & POWERS, 1926.
„ <i>squarrosa</i> L.	7		PERCIVAL, 1926.
		28	EMME, 1924.
„ <i>squarrosa</i> CAR.	14		KAGAWA, 1928.
„ <i>squarrosa</i> ssp. <i>Meyeri</i> GRISEB.	7		SOROKINA, 1928.
„ <i>squarrosa</i> ssp. <i>typica</i> ZHUK.	7		„ „
Section <i>Conopyrum</i> (JAUB. et Sp.) ZHUK.			
<i>Aegilops caudata</i> L.	7		BLEIER, 1928b.
„ <i>caudata</i> ssp. <i>dichasians</i> ZHUK.	7		SOROKINA, 1928.
„ <i>caudata</i> var. <i>polyathera</i>		14	SCHIEHMANN, 1928a, b.
„ <i>comosa</i> SIBTH. et SM.	7		SOROKINA, 1928.
„ <i>comosavar. subventricosa</i> (= <i>A. Heldreichii</i>)		14	SCHIEHMANN, 1928a, b.
Section <i>Gastropyrum</i> (JAUB. et Sp.) ZHUK.			
<i>Aegilops ventricosa</i>	14		PERCIVAL, 1923; SCHIEHMANN, 1928a, b.
		28	KIHARA, 1924.
„ <i>ventricosa</i> TAUSCH.	6		BALLY, 1919.
	14		PERCIVAL, 1926; BLEIER, 1928b
		28	EMME, 1924.
„ <i>ventricosa</i> COSS.	14		VAVILOV & JAKUSHKINA, 1925.
„ <i>ventricosa sapocomosa</i> COSS.	14		SOROKINA, 1928.
Section <i>Sitopsis</i> (JAUB. et Sp.) ZHUK.			
<i>Aegilops Aucheri</i> ssp. <i>virgata</i> ZHUK.	7		SOROKINA, 1928.

¹⁾ PERCIVAL (1926) explains that *A. squarrosa* has been applied to *A. ventricosa* TAUSCH; *A. caudata* L., *A. cylindrica* Host., as well as to the Asiatic *A. squarrosa*.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
<i>Aegilops bicornis</i> (FORSK.)			
JAUB et Sp.	7		SOROKINA, 1928.
" <i>longissima</i> (SCHW. et MUSCHL.) EIG.	7		" "
" <i>speltoides</i>		14	KAGAWA, 1926.
" <i>speltoides</i> TAUSCH.	7		PERCIVAL, 1926'
	7	14	KAGAWA, 1928.
" <i>speltoides</i> var. <i>ligustica</i> EIG.	7	14	SCHIEMANN, 1928a, b.
" ssp. <i>ligustica</i> FIORI	7		SOROKINA, 1928.
" <i>speltoides</i> ssp. <i>submutica</i> ZHUK.	7		" "
" <i>speltoides</i> var. <i>typica</i> EIG. (= <i>Aucheri</i>)	7	14	SCHIEMANN, 1928a, b.
Section Polyploides ZHUK.			
<i>Aegilops crassa</i> BOISS.		28	EMME, 1924.
	21		PERCIVAL, 1926.
" <i>crassa</i> ssp. <i>trivalis</i> ZHUK.	21		SOROKINA, 1928.
" <i>crassa</i> ssp. <i>Vavilovi</i> ZHUK.	ca. 21 ¹⁾		" "
" <i>turcomanica</i> ROSHEV	ca. 21		" "
Section (?)			
<i>Aegilops triticoides</i>		28	KIHARA, 1924.
" <i>triticoides</i> REG.		28	EMME, 1924.
" <i>uniaristata</i>	14		SCHIEMANN, 1928a, b.
" <i>variabilis</i> EIG. ²⁾	14		SOROKINA, 1928.
" - „Bastardtyp” (<i>triuncialis</i> × <i>triaristata</i>)	14	28	SCHIEMANN, 1928b.
<i>Aegilops</i> Hybrids:			
" <i>cylindrica</i> × <i>Triticum durum</i>	$\frac{35_1}{2}$		BLEIER, 1928b.
" <i>cylindrica</i> × <i>Triticum spelta</i>	$7 + \frac{21_1}{2}$		" "
" <i>cylindrica</i> × <i>Triticum vulgare</i> F ₂	$7 + \frac{21_1}{2}$		SAX (1926), 1929.
" <i>ovata</i> × <i>A. caudata</i> L.	$7-10 + \frac{7_1-1_1}{2}$		BLEIER, 1928b.

¹⁾ A satellite appeared in this species.

²⁾ Eight samples were investigated.

GRAMINEAE (continued)		n	2n	
AEGILOPS (continued)				
"	<i>ovata</i> × <i>Triticum dicoccum</i> F ₁	$\frac{28_1}{2}$		SAX, 1928.
"	<i>ovata</i> × <i>Triticum dicoccum</i> F ₂	14+14 ₁ , 21 ₁	" " "	
(<i>ovata</i> × <i>Triticum dicoccum</i> F ₁) × <i>Triticum dicoccum</i>	14+14 ₁	" " "	
"	<i>ovata</i> × <i>Triticum dicoccum</i> var. <i>Ajar</i> ¹⁾ . ca. 7 + $\frac{21_1}{2}$		28	PERCIVAL, 1926.
<i>Aegilotriticum</i> (forma <i>fertilis</i> No. 1) - <i>Aegilops ovata</i> × <i>Triticum dicoccoides</i>				
"	(forma <i>fertilis</i> No. 2) - <i>Aegilops ovata</i> × <i>Triticum durum</i>	28 ²⁾	ca. 56	TSCHERMAK & BLEIER, 1926.
"	No. 1 × <i>Aegilotriticum</i> No. 2 (F ₃)	28	" " " "	
<i>Aegilops ovata</i> × <i>Triticum durum</i>				
"	<i>ovata</i> × <i>Triticum monococcum</i>	$\frac{28_1}{2}$		BLEIER, 1928b.
	or $\frac{21_1}{2}$		" "	
"	<i>ovata</i> × <i>Triticum vulgare</i> (Starling) ³⁾	$\frac{35_1}{2}$	35	PERCIVAL, 1926.
"	<i>ovata</i> × <i>Triticum vulgare</i> F ₁	$\frac{35_1}{2}$		BLEIER, 1928b.
"	<i>ovata</i> × <i>Triticum vulgare</i> F ₂	20+6 ₁	50	" "
"	<i>ovata</i> × <i>Triticum vil-</i>			

¹⁾ In these hybrids pairing of chromosomes was very loose in metaphase of the heterotypic division.

²⁾ This number was found in plants of F₂ and F₃ generations.

³⁾ In these hybrids pairing of chromosomes was very loose in metaphase of the heterotypic division.

GRAMINEAE (continued)		n	2n	
AEGILOPS (continued)				
<i>losum</i>		$\frac{21_1}{2}$		BLEIER, 1928b.
<i>Aegilops ovata</i> × (<i>Aegilops ovata</i> × <i>Triticum durum</i>)		$14 + \frac{14_1}{2}$		" "
" <i>ventricosa</i> × <i>Triticum villosum</i>		4+		" "
<i>Agropyrum repens</i>		21		STOLZE, 1925.
HORDEUM				
<i>Vulgare</i> Groups:				
<i>Hordeum Caput-Medusae</i> (L.)				
HACKEL		14		GRIFFEE, 1927.
" <i>deficiens</i>		14		" "
" <i>deficiens deficiens</i> . .		14		TANJI, 1925.
" <i>deficiens nudideficiens</i> .		14		" "
" <i>deficiens steudelii</i> . .		14		GRIFFEE, 1925.
" <i>deficiens tridax</i> . . .		14		TANJI, 1925.
" <i>distichon</i>	7			NAKAO, 1911.
" <i>distichon nigricans</i> .		14		TANJI, 1925.
" <i>distichon nigrilaxum</i> .		14		" "
" <i>distichon palmella</i> . .		14		" "
" <i>distichon</i> var. <i>Svanhals</i>		14		GRIFFEE, 1925.
" <i>distichum</i>		14		KIHARA, 1924
" <i>distichum</i> L. var. <i>erectum</i> SCHÜBL. . . .	7			STOLZE, 1925.
" <i>distichum</i> L. var. <i>zeocrichum</i> L.		14		" "
" <i>intermedium</i>		14		GRIFFEE, 1927.
" <i>intermedium cornutum</i>		14		" 1925.
" <i>intermedium Laxtoni</i>		14		TANJI, 1925.
" <i>intermedium mortoni</i>		14		" "
" <i>maritimum</i>		14		" "
" <i>maritimum</i> WITH. . .		14		GRIFFEE, 1927.
" <i>spontaneum</i>	7	14		V. UBISCH. 1921.
" <i>spontaneum</i> C. KOCH.	7	14		TANJI, 1925; GRIFFEE, 1927.
" <i>spontaneum</i> ¹⁾	7	14		STOLZE, 1925. .
" <i>vulgare</i> ¹⁾	7	14		AASE & POWERS, 1926.
				V. UBISCH, 1921; KIHARA, 1924; GRIFFEE, 1927.

¹⁾ For list of varieties of *Hordeum vulgare* given by TANJI, 1925, and EMME, 1925, see previous list (GAISER, 1926). Thirty-nine varieties have a diploid number of 14.

GRAMINEAE (continued)	n	2n	
<i>Hordeum</i> (continued)			
<i>Hordeum vulgare</i> var. <i>Manchuria</i>		14	GRIFFEE, 1925.
" <i>vulgare</i> L. var. <i>Winter Club</i>	7		AASE & POWERS, 1926.
<i>Jubatum</i> Group:			
<i>Hordeum jubatum</i>		ca. 14	TANJI, 1925.
" <i>jubatum</i> L.		14	AASE & POWERS, 1926.
	14	28	GRIFFEE, 1927.
" <i>murinum</i>		14	TANJI, 1925.
" <i>murinum</i> L.	7	14	STOLZE, 1925.
	14		AASE & POWERS, 1926.
			GRIFFEE, 1927.
<i>Nodosum</i> Group:			
<i>Hordeum nodosum</i>		14	TANJI, 1925.
" <i>nodosum</i> L.	21	42	GRIFFEE, 1927.
CYPERACEAE			
ERIOPHORUM ¹⁾			
Section <i>Vaginata</i> .			
<i>Eriophorum vaginatum</i> L. . .	29		HÅKANSSON, 1923.
Section <i>Phyllanthella</i>			
<i>Eriophorum polystachyum</i> L. .	29	" "	
SCIRPUS ¹⁾			
Section <i>Taphrogeton</i>			
<i>Scirpus radicans</i> SCHKUHR. . .	28	" "	
" <i>silvaticus</i> L.	31	" "	
Section <i>Bulboschoenus</i>			
<i>Scirpus maritimus</i> L.	52	" "	
Section <i>Schoenoplectus</i>			
<i>Scirpus lacustris</i> L.	21	" "	
" <i>Tabernaemontani</i> GMEL	21	" "	
Section <i>Blysmus</i>			
<i>Scirpus compressus</i> (L.) PERS..	22	" "	
Section <i>Isolepis</i>			
<i>Scirpus setaceus</i> L.	13.		HÅKANSSON, 1923.
Section <i>Heleocharis</i>			
<i>Scirpus multicaulis</i> SM. . . .	10	" "	
" <i>paluster</i> L.	8		PIECH, 1924, 1928a, b.
" <i>palustris</i> L.	19		HÅKANSSON, 1923.
" <i>uniglumis</i> LINK.	23	" "	
	16		PIECH, 1928a, b.
Section (?)			
<i>Scirpus acutus</i> MUHL. f. <i>condensatus</i> (FARWELL) FERN	20		HICKS, 1928.

¹⁾ Classification under sections is according to KÜENTHAL (1909).

CYPERACEAE (continued)	n	2n	
<i>Scirpus</i> (continued)			
<i>Scirpus americanus</i> PERS. . .	38		Hicks, 1928.
" <i>americanus</i> PERS. (irregular form)	50-64	" "	
" <i>atrocinctus</i> FERN. . .	34	" "	
" <i>atrovirens</i> MUHL. . . .	25-30	" "	
" <i>campestris</i> BRITTON			
var. <i>fernaldi</i> (BICKNELL) BARTLETT . .	ca. 55	" "	
" <i>campestris</i> var. <i>paludosus</i> (A. NELSON) FERN	55-57	" "	
" <i>cyperinus</i> (L.) KUNTH			
var. <i>pelius</i> FERN . .	33	" "	
" <i>gluviatilis</i> (TOIR.) GRAY	55	" "	
" <i>georgianus</i> HARPER (S. <i>atrovirens</i> MUHL. var. <i>georgianus</i> (HARPER) FERN.)	28	" "	
" <i>heterochaetus</i> CHASE .	18	" "	
" <i>longii</i> FERN.	34	" "	
" <i>olneyi</i> GRAY	39	" "	
" <i>robustus</i> PURSH. . . .	53-55	" "	
" <i>rubrotinctus</i> FERN. . .	33	" "	
" <i>validus</i> VOHL.	21	" "	
CAREX ¹⁾			
Subgenus <i>Primocarex</i>			
Section <i>Microcephalae</i>			
<i>Carex capitata</i> SOLAND . . .	25		HEILBORN, 1928a.
Subgenus <i>Vignea</i>			
Section <i>Stenorhynchae</i>			
<i>Carex conferta</i> HOCHST. . . .	26	" "	1928a
" <i>crus-corvi</i> SHUTTL. . . .	26	" "	
Section <i>Tenuiflorae</i>			
<i>Carex tenuiflora</i> WAHLÉNB. . .	31 ²⁾	" "	
Section <i>Elongatae</i>			
<i>Carex remota</i> L.	31	" "	
Subgenus <i>Eucarex</i>			
Section <i>Acutae</i>			
Subsection <i>Cryptocarpae</i>			
<i>Carex salina</i> WAHLÉNB. var. <i>Kategatensis</i> (FR.) ALMQ. . .	42 ³⁾	" "	

¹⁾ Classification under sections is according to KÜKENTHAL, 1909.

²⁾ It is possible that 32 is the correct number.

³⁾ It is possible that 42 is the correct number.

CYPERACEAE (continued)	n	2n	
Section <i>Limosae</i>			
<i>Carex magellanica</i> LAM.	29		HEILBORN, 1928a.
Section <i>Frigidae</i>			
Subsection <i>Fuliginosae</i>			
<i>Carex atrofusca</i> SCHKUHR.	18		" "
Section <i>Hymenochloenae</i>			
Subsection <i>Longirostres</i>			
<i>Carex silvatica</i>	29		" "
Section <i>Spirostachyae</i>			
<i>Carex pulchella</i> LÖNNR.	35		" "
Section <i>Physocarpae</i>			
Subsection <i>Vesicariae</i>			
<i>Carex lacuvirostris</i> FR.	41		" "
" <i>saxatilis</i> L. probably	40 (41?)		" "
Section (?)			
<i>Carex aquatilis</i> ca. 37			STOUT, 1913.
	> 40		VUCKOVIC, 1928.
" <i>Hornschuchiana</i> × <i>Oederi</i>	34-40 ¹⁾		HEILBORN, 1928a.

PRINCIPES

PALMAE

<i>Phoenix dactylifera</i>	28	NĚMEC, 1910a.
<i>Trachycarpus excelsus</i> WENDL.		
var. <i>Fortunei</i> MAK.	18 ²⁾	SINOTO 1928a.
<i>Pritchardia filamentosa</i>	24	NĚMEC, 1910a.
<i>Chamaedorea corallina</i> KARST..	12-14	SÖDERBERG, 1919.
" <i>glaucophylla</i>	13	SÜSSENGUTH, 1920.
" <i>Karwinskiana</i>	26	" 1921.
" <i>Sartorii</i>	6-7	" 1920.
<i>Cocos nucifera</i> LINN.. . . .	16	SANTOS, 1928.
<i>Nipa fruticans</i>	8	RADERMACHER, 1925.

SPATHIFLORAE

ARACEAE

ANTHURIUM³⁾Section I. *Tetraspermium*

SCHOTT.

Anthurium scandens (AUBL.)

ENGL. 24 48 GAISER, 1927

¹⁾ In most cases 5—8 diminutive (univalent) chromosomes were counted among these, though there may have been as many as 16 univalents.

²⁾ A pair of unequal chromosomes was distinguishable.

³⁾ The following species are classified under sections according to ENGLER & PRANTL.

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)			
<i>Anthurium violaceum</i> var <i>leuco</i>			
<i>carpum</i>	16		CAMPBELL, 1905.
Section II. <i>Gymnopus</i>			
ENGL.			
<i>Anthurium gymnopus</i> GRISEB.		ca. 30	GAISER, 1927.
Section III. <i>Porphyrochitonium</i> SCHOTT.			
<i>Anthurium Scherzerianum</i>			
SCHOTT (var. <i>grandiflorum</i>)	ca. 15	ca. 30	GAISER, 1927.
	16	30-32	HAASE-BESSEL, 1928
Section IV. <i>Pachyneurium</i>			
SCHOTT			
<i>Anthurium acaule</i> (JACQ.)			
SCHOTT	15	30	GAISER, 1927.
" <i>recusatum</i> SCHOTT	ca. 15	ca. 30	" "
" <i>Hookeri</i> KUNTH	ca. 15	ca. 30	" "
" <i>crassinervium</i> (JACQ.)			
SCHOTT	ca. 30	ca. 60	" "
" <i>tetragonum</i> (HOOK.)			
SCHOTT	15	30	" "
" <i>maximum</i> (DESF.)			
ENGL.	ca. 15	ca. 30	" "
" <i>hacumense</i> ENGL.		ca. 30	" "
" <i>grandifolium</i> (JACQ.)			
KUNTH		ca. 30	" "
" <i>cordatum</i> (WILLD.)			
G. DON.		ca. 30	" "
" <i>Brownii</i> MAST.		ca. 30	" "
Section VI. <i>Leptanthurium</i> SCHOTT			
<i>Anthurium gracile</i> LINDL.	15	ca. 30	" "
" <i>acutangulum</i> ENGL.	ca. 15	ca. 30	" "
Section VIII. <i>Xialophyllum</i> SCHOTT			
<i>Anthurium Tuerckheimii</i> ENGL.		ca. 30	" "
Section IX. <i>Polyneurium</i> ENGL.			
<i>Anthurium Wallisii</i> MAST.		ca. 60	" "
Section X. <i>Urospadix</i> ENGL.			
<i>Anthurium contum</i> SCHOTT	15	ca. 30	" "
" <i>littorale</i> ENGL.	15	ca. 30	" "
" <i>Beyrichianum</i>			
ENGL.	ca. 15		" "

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)			
<i>Anthurium Olfersianum</i> KUNTH.	ca. 15	ca. 30	GAISER, 1927.
Section XI. Episeiostonium SCHOTT.			
<i>Anthurium Bakeri</i> Hook. . .		ca. 30	GAISER, 1927.
" <i>Dominicense</i>			
SCHOTT.	ca. 15	ca. 30	" "
" <i>Guildingii</i> SCHOTT.	ca. 15	ca. 30	" "
Section XIII. Cardiolochium SCHOTT			
<i>Anthurium magnificum</i> LIND.	ca. 15	ca. 30	GAISER, 1927.
" <i>magnificum</i>	16	30-32	HAASE-BESSELL, 1928
" <i>crystallinum</i> LIND.	ca. 15	ca. 30	GAISER, 1927.
" <i>Warocqueanum</i> J.			
MOORE		ca. 30	" "
Section XIV. Chamaerapium SCHOTT.			
<i>Anthurium radicans</i> C. KOCH .		± 50	GAISER, 1927.
Section XV. Calomystrium SCHOTT.			
<i>Anthurium nymphaeifolium</i> C.			
" KOCK et BOUCHE.		ca. 30	GAISER, 1927.
" <i>Veitchii</i> MAST. . .	15	ca. 30	" "
Section XVI. Belolochium SCHOTT emend ENGL.			
<i>Anthurium Andraeanum</i> LIND.	ca. 15	ca. 30	GAISER, 1927.
" <i>Andraeanum</i> ¹⁾ . .	16	30-32	HAASE-BESSELL, 1928.
<i>Anthurium denudatum</i> ENGL.	ca. 15	ca. 30	GAISER, 1927.
Section XVII. Semaephyllium SCHOTT			
<i>Anthurium subsignatum</i>			
" SCHOTT.		ca. 30	GAISER, 1927.
Section XVIII. Schizopla-cium SCHOTT			
<i>Anthurium pedato-radiatum</i>			
" SCHOTT.	ca. 15	ca. 30	GAISER, 1927.
" <i>digitatum</i> (JACQ.)			
G. DON.			
" <i>undatum</i> SCHOTT. .		ca. 30	" "
" <i>variabile</i> KUNTH. .	15	ca. 30	" "
Hybrids:			
<i>Anthurium Chelseiense</i> N. E.			
" BROWN	ca. 15	ca. 30	" "

¹⁾ The *Andraeanum* type used was probably a hybrid with *A. nymphaeanum* (HAASE-BESSELL, 1928).

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)				
Hybrids (continued)				
<i>Anthurium ferrierense</i> BERG-				
MAN			ca. 30	GAISER, 1927.
" <i>Froebelii</i> HORT. . .	ca. 15		ca. 30	" "
" „ <i>gloriosum</i> ” from				
Mr. FISHER) . .	ca. 15			
" <i>roseum</i> HORT (pro-				" "
bably <i>A. Andrea-</i>				
<i>num roseum</i>) . .			ca. 30	" "
Unidentified <i>Anthurium</i> seed-				
ling from Dept. of Parks (New				
York City)			ca. 30	" "
<i>Spathiphyllum Patinii</i>	9			JÜSSEN, 1928.
<i>Symplocarpus foetidus</i>	8			GOW, 1907.
<i>Aglaonema versicolor</i>	8			" 1908.
<i>Diffenbachia daraguiniana</i> . .	8			" "
<i>Zantedeschia aethiopica</i>	16			OVERTON, J. B., 1909.
<i>Richardia africana</i> Kth.	12			MICHELL, 1916.
<i>Pentandra undulata</i>	ca. 22			DUGGAR, 1900.
<i>Xanthosoma spec.</i>	16			GOW, 1913.
<i>Arum maculatum</i>			ca. 32	SCHMUCKER, 1925.
<i>Arisaema serratum</i> var. <i>Thun-</i>				
<i>bergii</i> f. BLUMEI			26	(YAMAKAWA, 1916) given by
				ISHIKAWA, 1916.
<i>Arisaema triphyllum</i>	16			ATKINSON, 1899.
FARINOSAE				
XYRIDACEAE				
<i>Xyris indica</i> L.	16			WEINZIEHER, 1914.
COMMELINACEAE				
<i>Tradescantia fluminensis</i> . . .	12(?)			TISCHLER, 1921-22.
" <i>subaspera</i> (= <i>T.</i>				
<i>virginica</i>) . . .	10-12			STRASBURGER, 1882.
	12			" 1888
" <i>virginica</i>	12			STRASBURGER, 1904b; MIYAKE,
				1905; BELLING, 1927a; SHA-
				DOWSKY, 1927.
	12-16		23-26	FARMER & SHOVE, 1905.
	12,			
	11+1 ₁			NAWASCHIN, S., 1911.
			24	BELLING, 1927d.
<i>Rhoeo discolor</i> HANCE	4-8			GALLAGHER, 1908.
" <i>discolor</i>	6			SÜSSENGUTH, 1920; TISCHLER,
				1921-22.

COMMELINACEAE (continued)

Rhoeo (continued)

6	12	SUSSENGUTH, 1921.
	12	BELLING, 1925, 1927 <i>d</i> .
12 ₁		" given by DAVENPORT 1927.

Zebrina pendula SCHNIZ. . . . 12-15

HANCE, 1915.

PONTEDERIACEAE

Pontederia cordata 8 15-16 SMITH, R. W. 1893.*Eichornia crassipes* 16 ca. 30 " " " "" *speciosa* KUNTH (= *E. crassipes*) ca. 32 TAYLOR, 1925*c*.

PHILYDRACEAE

Philydrum lanuginosum 8 (WINKLER 1921) given by
TISCHLER, 1921-22).

LILIIFLORAE

JUNCACEAE

Oxychloe andina eca. 8 BRENNER, 1922.*Juncus bufonius* ¹⁾ 8-10 " "" *compressus* ¹⁾ 8-10 " "" *filiformis* ¹⁾ 8-10 " "" *lamprocarpus* ¹⁾ 8-10 " "" *squarrosus* 8-10 " "*Luzula campestris* ²⁾ 9 " "" *multiflora* 9 " "" *nivea* 9 " "

MELANTHACEAE

Veratrum album 16 STENAR, 1928.

LILIACEAE

Tofieldia calyculata (L.) WAH-

LENB 12

SEELIEB, 1924.

Heloniopsis breviscapa 34 (MIYAJI, 1916) given by ISHI-
KAWA, 1916.17 ³⁾ ONO, 1926*b*.*Tricyrtis formosana* 26 NAWA, 1928." *hirta* 6 IKEDA, 1902.

12-13 ISHIKAWA, 1916.

13 26 NAWA, 1928.

" *hirta* HOOK. 6 IKEDA, 1902." *macropoda* 26 NAWA, 1928." *stolonifera* 26 " "¹⁾ The chromosome numbers of these species were not definitely determined.²⁾ 12 and 14 chromosomes were frequently observed.³⁾ 51 chromosomes were counted also in nuclear divisions in the endosperm (ONO, 1926*b*).

LILIACEAE (continued)	n	2n	
<i>Tricyrtus</i> (continued)			
<i>Tricyrtus hirta</i> × <i>formosana</i>	7-8		NAWA, 1928.
„ <i>hirta</i> × <i>stolonifera</i> ,	7-8		„ „
<i>Colchicum autumnale</i> L.	(10)-12		HEIMANN-WINAWER, 1919.
<i>Asphodelus albus</i>	13 ¹⁾		SUSSENGUTH, 1921.
<i>Asphodeline lutea</i>		14	„ 1920.
<i>Paradisea Liliastrum</i>	16		STENAR, 1928.
<i>Bulbine annua</i> WILLD.		26	MÜLLER, C. 1912.
<i>Anthericum roseum</i>	16		STENAR, 1928.
<i>Chlorophytum Sternbergianum</i>	12		STRASBURGER, 1888.
	6		SUSSENGUTH, 1920.
<i>Hosta ovata</i>	> 16		SYKES, 1908a.
		probably	
		48	„ 1908b.
„ <i>coerulea</i> (= <i>Funkia</i>			
<i>ovata</i>)	12		BELLING, 1927c.
<i>Funkia Sieboldiana</i>	> 16		SYKES, 1908a.
		probably	
		48	„ 1908b.
	24		MIYAKE, 1905.
<i>Hosta Sieboldiana</i> LODD.	24		STRASBURGER, 1882, 1900;
			INARIYAMA, 1928.
<i>Funkia</i> (<i>Hosta</i>) <i>Sieboldiana</i>			
Hook.	24		STRASBURGER, 1905b.
<i>Hemerocallis citrina</i>		24	TIMM, 1928.
„ <i>fulva</i> L.	ca. 12		STRASBURGER, 1882.
	16		TISCHLER, 1915.
	18		JUEL, 1897.
	24		SCHÜRHOFF, 1926.
„ <i>fulva</i>	33		BELLING, 1925c.
	$\frac{2}{2}$		
	12 ²⁾		TIMM, 1928.
<i>Kniphofia aloides</i>	6		BELLING, 1928c.
„ (<i>Tritoma</i>) <i>Pfitzeri</i>			
HORT.	6		DE VILMORIN & SIMONET, 1927b
<i>Aloe abyssinica</i>	7	14	FERGUSON, N., 1926.
„ <i>arborescens</i> MILL.	7		TAYLOR, 1925b.
„ <i>arborescens</i>		14	FERGUSON, N., 1926.
„ <i>arborescens Natalensis</i>	7	14	„ „ „
„ <i>Cameronii</i>	7		„ „ „
„ <i>ciliaris</i>		> 45	„ „ „

¹⁾ Judged by Figure 21, page 324, SUSSENGUTH, 1921.

²⁾ Irregular division gave rise to many small supernumerary nuclei.

LILIACEAE (continued)	n	2n	
<i>Aloe</i> (continued)			
<i>Aloe cristata</i>	7		FERGUSON, N., 1926.
" <i>grandis</i>	7		" " "
" <i>Hamburyana</i> NAUD. (<i>A.</i> <i>striata</i> HAW.)		14	MÜLLER, C., 1912.
" <i>pluridens</i>	7	14	FERGUSON, N., 1926.
" <i>purpurascens</i>	7 ¹⁾		BELLING, 1928c.
<i>Gasteria apricoides</i>		ca. 14	FERGUSON, N., 1926.
" <i>cheilophylla</i> BAKER	7	14	TAYLOR, 1924.
" <i>cheilophylla</i>	7		FERGUSON, N., 1926.
" <i>Cooperi</i>	7		" " "
" <i>croucheri spatulata</i>	7		" " "
" <i>excelsa</i>	7		" " "
" <i>excelsa</i>	7		" " "
" <i>Holtzei</i>	7		" " "
" <i>lingua</i>	7		" " "
" <i>lingua</i> var. <i>conspurcata</i>	7		" " "
" <i>nigricans platyphylla</i>	7		" " "
" <i>nigricans crassifolia</i>		28	" " "
" <i>retata</i>	7		" " "
" <i>rotata</i>	7	14	" " "
<i>Apicra aspera</i>	7		" " "
" <i>deltoides</i>	7	14	" " "
" <i>pentagona spiralis</i>	14		" " "
<i>Haworthia Cooperi</i>	7		" " "
" <i>cymbiformis</i> HAW. var. <i>obtusata</i> BAKER.	7	14	TAYLOR, 1925b.
" <i>cymbiformis</i>	7		FERGUSON, N., 1926.
" <i>glabrata</i>	7		" " "
" <i>glabra pervivida</i>	7		" " "
" <i>hybrida</i>	7		" " "
" <i>laevis</i>	7		" " "
" <i>pseudotortuosa</i>	14		" " "
" <i>radula</i>	7		" " "
" <i>recurva</i>	7		" " "
" <i>rigida</i>		14	" " "
" <i>subfasciata</i>		28(?)	" " "
" <i>tesselata</i> (WM. HORTON) 2 bars.		14	" " "
" <i>tesselata</i> (WM. HORTON) 4 bars		23	" " "
" <i>tesselata</i> KEW		23	" " "
" <i>tesselata parva</i> KEW.	14		" " "

¹⁾ From Fig. 2, page 339 (BELLING, 1928c).

LILIACEAE (continued)	n	2n	
<i>Agapanthus umbellatus</i>	15		BELLING, 1928c.
<i>Gagea lutea</i>	36 ¹⁾		SAKAMURA & STOW, 1926—7.
„ <i>lutea</i> KER.		16	STENAR, 1927b.
<i>Allium ascalonicum</i>	8		HIRATA & AKIHAMA, 1927.
„ <i>baicalense</i>	8		„ „ „ „
„ <i>baiselense</i>	8		„ „ „ „
„ <i>Bakeri</i> BEGEL.		16	KATAYAMA, 1928.
„ <i>cepa</i>		16	NĚMEC, 1898a ²⁾ , 1910; LUNDE- GARDH, 1910, 1912a; GRÉ- GOIRE, 1906, 1912; v. SCHUS- TOW, 1913.
	8		MIYAKE, 1905, TAYLOR, 1925a
	8	16	REED, 1914.
	16		MODILEWSKI, 1928a.
		30+	MERRIMAN, 1904.
		24	BONNEVIE, 1903.
		10 ₄ ³⁾	MÜHLMANN, 1926.
„ <i>cepa</i> L.		16	SCHAFFNER, 1898; DE HORNE 1911 ⁴⁾ , TAYLOR, 1926.
„ <i>cernuum</i> ROTH.	8		MOTTIER & NOTHNAGEL, 1913.
„ <i>fistulosum</i>	8		STRASBURGER, 1888; HIRATA & AKIHAMA, 1927.
„ <i>fistulosum</i> L.	8		ISHIKAWA, 1897.
„ <i>fistulosum</i> L. (NISSATO)	8		KATAYAMA, 1928.
„ <i>fistulosum</i> var. <i>caespito-</i> <i>sum</i>	8		HIRATA & AKIHAMA, 1917.
„ <i>Ledibourianum</i>	8		HIRATA & AKIHAMA, 1927.
„ <i>middendorffianum</i>	16		„ „ „ „
„ <i>moly</i>	7		MIYAKE, 1905.
„ <i>narcissiflorum</i>	8		HIRATA & AKIHAMA, 1927.
„ <i>nipponicum</i> FRANCH. et SAV.	8		KATAYAMA, 1928.
„ <i>odorum</i> L.	8		SCHÜRHOFF, 1922; HABER- LANDT, 1925.
		16	HABERLANDT, 1922 ⁵⁾ , 1923.
	8	16	KATAYAMA, 1928.

¹⁾ It was possible to produce pollen grains with varying numbers of chromosomes by changing the temperature.

²⁾ NĚMEC (1898a) found 8 instead of 16 chromosomes in some older cells of the epidermis. In 1910 NĚMEC reported finding syndiploid nuclei in tips from wounded roots.

³⁾ These tetrads (10) appeared after treatment with pilocarpin solution.

⁴⁾ DE HORNE (1911) considered 8 to be the diploid number, though he saw 16 chromosomes.

⁵⁾ HABERLANDT (1922) determined this number in the cells of the embryo.

LILIACEAE (continued)	n	2n	
<i>Allium</i> (continued)			
	16	ca. 32	MODILEWSKI, 1925.
	16	32	" 1928a ¹⁾ .
<i>Allium ophioscorodon</i> G. DON..	14-16	ca. 32	" "
" <i>sativum</i>	8	16	DE TOLEDA PIZA, 1928.
" <i>Scorodoprasum</i> L. var.			
<i>viviparum</i> REGEL..		16	KATAYAMA, 1923.
" <i>stellerianum</i>	8		HIRATA & AKIHAMA, 1927.
" <i>tricoccum</i>	8		NOTHNAGEL, 1916.
" <i>ursinum</i> L.	8		GUIGNARD, 1884, 1885.
" <i>ursinum</i>	7		CHODAT, 1925a, 1925b.
" <i>victoriale</i>	8		MIYAKE, 1905.
" <i>victoralis</i>	16		HIRATA & AKIHAMA, 1927.
" sp. (?)	8		GUIGNARD, 1889.
<i>Triteleia</i> sp. (?)		10-12	MÜLLER, C., 1912.
<i>Lilium auratum</i>	12		BELLING, 1923a.
" <i>bulbiferum</i>	12		STRASBURGER, 1888, 1893.
" <i>canadense</i> L.	12		ALLEN, C., 1904, 1905a, b.
" <i>candidum</i>	12		GUIGNARD, 1891b; FARMER 1895b; MIYAKE, 1905; BEL- LING, 1923a.
" <i>candidum</i> L.	12		STRASBURGER, 1882; GUIG- NARD, 1884; BELAJEFF, 1894.
		23 ²⁾	NĚMEC, 1910.
" <i>chalcedonicum</i>	12		GUIGNARD, 1885.
" <i>cordifolium</i>	12		TAKAMINE, 1916.
" <i>croceum</i>	12		STRASBURGER, 1882; GUIG- NARD, 1891b.
" <i>longiflorum</i>	8, 10 & 12 16 ³⁾ , 18,		
		20, 22, 24	DIXON, 1895.
	12		YAMANOUCHI, 1901; BELLING, . 1926, 1927c, 1928a, b, c.
			BELLING, given by DAVENPORT 1927.
" <i>martagon</i>	12		GUIGNARD, 1889, 1891a; FAR- MER, 1893, 1895a, b; FARMER & MOORE, 1896; SARGANT, 1896, 1897; STRASBURGER, 1908; NAWASCHIN, S., 1910; HEIMANS, 1928.

¹⁾ Plants from München, Brno and Kopenhagen were examined.

²⁾ Syndiploid nuclei with 48 chromosomes were found in root-tips treated with chloral hydrate.

³⁾ Dixon (1895) found 16 to be the most frequent number.

LILIACEAE (continued)	n	2n	
<i>Lilium</i> (continued)			
	8, 10		OVERTON, 1891.
	12	24	OVERTON, 1893a.
<i>Lilium martagon</i> L.	12		GUIGNARD, 1884; MIYAKE, 1905
	12	24	GUIGNARD, 1891b.
„ <i>pardalinum</i>	12		BELLING, 1928b, c.
„ <i>philadelphicum</i>	12		SCHAFFNER, 1897.
„ <i>pyrenaicum</i> GOUAN	12		NEWTON, 1926.
„ <i>regale</i>	12		BELLING, 1926, 1927c, 1928a, c.
„ <i>speciosum</i>	12		FARMER, 1895b; GREGOIRE, 1912; BELLING, 1928a.
„ <i>superbum</i>	12		GUIGNARD, 1885.
„ <i>superbum</i> L.	12		CHIPMAN, 1925.
„ <i>tenuifolium</i> FISCH.	12		NEWTON, 1926.
„ <i>tigrinum</i>	12		FARMER, 1895b; CHAMBERLAIN, 1897; SCHAFFNER, 1906; BELLING, 1928a.
<i>Fritillaria imperialis</i>	8		STRASBURGER, 1888.
		> 24	STRASBURGER, 1882.
		ca. 24	VAN WISSELINGH, 1899.
„ <i>imperialis</i> L.		24	LENOIR, 1923; TAYLOR, 1926.
„ <i>meleagris</i>	12		GUIGNARD, 1891b.
„ <i>meleagris</i> L.	12		BELAJEFF, 1894.
	12	24	NEWTON, 1926.
„ <i>persica</i> L.	12		STRASBURGER, 1882, 1888.
„ <i>pudica</i> SPRENG.	12	24 ¹⁾	SAX, 1918.
<i>Erythronium albidum</i>	12		SCHAFFNER, 1901.
„ <i>Americanum</i>	12		SCHAFFNER, 1901.
<i>Lloydia serotina</i>		24	NEWTON, 1926.
TULIPA ²⁾			
Section <i>Leiostemones</i>			
<i>Tulipa armena</i> BOISS.		24	NEWTON, 1926.
„ <i>Batalini</i> REGEL.		24	„ „
„ <i>chrysantha</i> BOISS.	24	48	„ „
„ <i>clusiana</i> DC.	24 + $\frac{12}{2}$	ca. 60	„ „
„ <i>Eichleri</i> REGEL.		24	„ „
„ <i>galatica</i> FREYN.		32	„ „
„ <i>Greigii</i> REGEL.		24	„ „
„ <i>Kauffmanniana</i> REGEL	12	24	„ „
<i>Lilium Kolpakowskiana</i> REGEL	12	24	„ „
„ <i>linifolia</i> REGEL.	12	24	„ „

¹⁾ This number was obtained in the first division of the fertilized egg cell.²⁾ Classification under sections is according to ENGLER and PRANTL.

LILIACEAE (continued)	n	2n	
TULIPA (continued)			
<i>Lilium maximowiczii</i> REGEL	12	24	NEWTON 1926
" <i>praestans</i> HOOG.	12	24	" "
" <i>sprengeri</i> BAKER		24	" "
" <i>stellata</i> HOOKER		48	" "
" <i>viridiflora</i> BAKER	12	24	" "
" sp.(?) Copper Color (hort.)		24	" "
" sp. (?) Duc van Thol. (hort.) ¹⁾	12	24	" "
" sp. (?) Keiserkron (hort.)		36	" "
" sp. (?) Massenet (hort.)		36	" "
" sp. (?) Murillo (hort.)	12	24	" "
Section <i>Eriostemon</i> es			
<i>Tulipa celsiana</i> (= <i>australis</i>)	12		GUIGNARD, 1900.
" <i>australis</i> LINK.	12	24	NEWTON, 1926.
" <i>biflora</i> PALL.		24	" "
" <i>daystemon</i> REGEL.	12	24	" "
" <i>Hageri</i> HELDR.	12	24	" "
" <i>humilis</i> HERBERT.	12	24	" "
" <i>orphanidea</i> BOISS.	12	24	" "
" <i>primulina</i> BAKER	12	24	" "
" <i>pulchella</i> FENZL.		24	" "
" <i>silvestris</i>	12		GUIGNARD, 1900.
" <i>silvestris</i> L.		ca. 48	DE MOL, 1925.
	24	48	NEWTON, 1926.
" <i>turkestanica</i> REGEL.		24	" "
" <i>whittalli</i> ELWES	24	48	" "
Section (?) ²⁾			
<i>Tulipa Gesneriana</i>	12		SCHNIEWIND-THIES, 1901.
" <i>Gesneriana</i> L.	12		ERNST, 1901.
" <i>Gesneriana</i> cult. hort.		24	HEITZ, 1926.
" <i>Gesneriana</i> var. <i>Breedertulip</i>		24	DE MOL, 1925.
" <i>Gesneriana</i> var. <i>Breedertulip</i> Goliath		ca. 36	" " "
" <i>Gesneriana</i> var. <i>Darwin</i>		24	" " "
" <i>Gesneriana</i> var. <i>La Candeur</i>		24	" " "
" <i>Gesneriana</i> var. <i>La Reine</i> ³⁾		24	" " "

¹⁾ See also *Tulipa suaveolens*. According to DE MOL (1928c) "Duc van Thol" tulips are *T. suaveolens*.

²⁾ The following species were not classified under sections.

³⁾ More than 50 bud variations were unaccompanied by any change in chromosome number.

LILIACEAE (continued)		n	2n	
<i>Tulipa</i> (continued)				
<i>Tulipa Gesneriana</i> var. <i>Murillo</i> ¹⁾			24	DE MOL, 1925, 1926a, 1927c.
			23	" " 1927c.
" <i>Gesneriana</i> var. <i>Pink Beauty</i>			36	" " " 1928b.
" <i>Gesneriana</i> var. <i>Proserpine</i>			24	" " "
" <i>Gesneriana</i> var. <i>Tourne-sol</i>			24	" " "
" <i>Gesneriana</i> var. <i>White Duc</i>			24	" " "
" <i>odoratissima</i> (<i>Duc van Thol</i> single)			24	" " 1928c.
" <i>suaveolens</i> (<i>Duc van Thol Tulips</i> ²⁾)			24	" " "
" <i>suaveolens</i> (<i>Scarlet Duc maxima</i>	12, 24		"	" " "
" <i>suaveolens</i> (<i>White Duc maxima</i>)	12, 24		"	" " "
" <i>suaveolens</i> ROTH. var. <i>Duc van Thol Scarlet</i> .	12	24	"	" " 1928d.
	24	48	"	" " "
<i>Albuca jastigiata</i> (?)		54		MÜLLER, C., 1912.
CALOCHORTUS ³⁾				
Section <i>Macrodenus</i>				
<i>Calochortus albus</i> DOUGL.	10	20		NEWTON, 1926.
" <i>anabilis</i> PURDY	10	20	"	"
" <i>Benthami</i> BAKER	10	20	"	"
" <i>maweanus</i> LEICHTL		20	"	"
Section <i>Mariposa</i>				
<i>Calochortus Catalinae</i> WATSON	7	14	"	"
" <i>clavatus</i> S. WATS.		16	"	"
" <i>lutea</i> DOUGLAS		14	"	"
" <i>Plummerae</i> GREENE		18	"	"
" <i>venusta</i> BENTH var. <i>Eldorado</i>	7	14	"	"
" <i>vesta</i> PURDY	14	28		NEWTON, 1926.

¹⁾ More than 40 bud variations were unaccompanied by any change in chromosome number. (DE MOL, 1926a).

²⁾ Ten different color varieties were examined: scarlet, white, maxima, cochineal, rose, yellow, orange, variegated, violet-white, and double (reddish-brown).

³⁾ Classification under sections is according to ENGLER & PRANTL. NEWTON (1926) found satellites were present throughout this genus.

LILIACEAE (continued)	n	2n	
<i>Urginea maritima</i>		20	HEITZ, 1926.
		40	HEITZ, 1926.
<i>Galtonia candicans</i>	8		SCHNIEWIND-THIES, 1901; STRASBURGER, 1904c, 1905b, 1910a; MIYAKE, 1905; DIG- BY, 1910.
	8	16	DIGBY, 1910.
		16	GREGOIRE, 1912; SUSSEN- GUTH ¹⁾ , 1921;
" <i>candicans</i> DCNE.		16	MÜLLER, C., 1912; NEWTON, 1924.
" <i>candicans</i> (BAKER) DCNE.	12		STRASBURGER, 1905b.
" <i>candicans</i> DES.		16	KIEHN, 1917; NAWASCHIN, S., 1927.
" <i>princeps</i> DCNE		16	NEWTON, 1924.
<i>Scilla autumnalis</i>		24-(28)	HEITZ, 1926.
" <i>bifolia</i> L.		20	MÜLLER, C., 1912.
" <i>campanulata</i>	8		McKENNEY, 1898.
		16	HEITZ, 1926.
" <i>cilica</i>		12	HEITZ, 1926.
" <i>hyacinthoides</i> var. <i>coerulea</i>	8		McKENNEY, 1898.
" <i>japonica</i> BAK.		16	SHIMOTOMAI, 1927.
" <i>non scripta</i>	8	16	VERTON, E., 1893a ²⁾ , b.
<i>Endymion nutans</i> DUM. (= <i>Scilla nutans</i>)	8		GRANIER & BOULE, 1911.
<i>Scilla nutans</i>	8		DARLINGTON, 1926a.
" <i>peruviana</i>		16	HEITZ, 1926.
" <i>sibirica</i>	8		SCHNIEWIND-THIES, 1901.
		12	HEITZ, 1926.
<i>Chionodoxa Luciliae</i> Boiss.		18	MÜLLER, C., 1912.
<i>Eucomis bicolor</i> (?)	30-32(34?)		" " "
<i>Ornithogalum arabicum</i>	36-38		HEITZ, 1926.
" <i>arcuatum</i> STEV.	34		DELAUNAY, 1926b.
" <i>byzantinum</i>	16-(18)		HEITZ, 1926.
" <i>montanum</i> (= <i>byzantinum</i> ?)	16-(18)		" "
" <i>caudatum</i>	32-(36)		" "
" <i>fimbriatum</i> WILLD.	12		DELAUNAY, 1926b.

¹⁾ In small plerome cells in the root-tips SUSSENGUTH (1921) often found 8 or 12 chromosomes.

²⁾ *Scilla non scripta* and other species of this genus were referred to by OVERTON (1893a).

³⁾ Division figures showing 1 and 2 extra chromosomes were also observed.

J ILIACEAE (continued)

Ornithogatum (continued)

	n	2n	
<i>Ornithogatum Hausknechtii</i> . .		(30)-32	HEITZ, 1926.
" <i>libanoticum</i> . .		10	" "
" <i>longibracteatum</i> .		52-66	" "
" <i>nanum</i> SIBITH et			
SM.		12	DELAUNAY, 1926b.
	6	12	" 1926c.
" <i>narbonense</i> . . .		14	HEITZ, 1926.
" <i>narbonense</i> ¹⁾ . .	14 ²⁾		SPRUMONT, 1928.
" <i>narbonense</i> L. .		16	DELAUNAY, 1926b.
	8	16	" 1926c.
" <i>nutans</i>		28-(32)	HEITZ, 1926.
" <i>nutans</i> ¹⁾	16 ³⁾		SPRUMONT, 1928.
" <i>oligophyllum</i>			
CLARKE		24	DELAUNAY, 1926b.
" <i>pater-familias</i> .		24-28	HEITZ, 1926.
" <i>pyramidale</i> . . .		ca. 32	" "
" <i>pyrenaicum</i> ¹⁾ .	32 ²⁾		SPRUMONT, 1928.
" <i>tempeskyanum</i> FR.			
et SINTH. . . .		18	DELAUNAY, 1926b.
	9	18	" 1926c.
" <i>tenuifolium</i> Guss.		16	" 1926b.
" <i>tenuifolium</i>			
TAUSCH. . . .		16	" 1926c.
" <i>umbellatum</i> . .		24-28	HEITZ, 1926.
" <i>umbellatum</i> ¹⁾ .	27		SPRUMONT, 1928.
	45		" "
<i>Drimiopsis maculata</i> LINDL. .	32	64 ³⁾	BARANOV, 1926.
<i>Hyacinthus amethystinus</i> . . .		24	HEITZ, 1926.
" <i>orientalis</i>	8	16	BLAKESLEE, given by DAVEN-
			PORT, 1925.
	8		BELLING, 1925a, 1927a, 1927b;
			DARLINGTON, 1926a.
" <i>orientalis</i> L. . . .	8		NĚMEC, 1898b; HYDE, 1909.
		16	DARLINGTON, 1926b.
" <i>orientalis</i> var. <i>al-</i>			
<i>bion</i>		16	DE MOL, 1926c.

¹⁾ Satellites were present in this species.²⁾ Diploid and tetraploid forms with twice the number of chromosomes and twice the number of satellites were found in these species.³⁾ Four large satellites were found associated with four long chromosomes and twelve to sixteen small satellites seemed to be associated with short chromosomes in root-tip cells. Only in the early stages of pollen-mother-cell division could four large satellites and a number of small ones be seen, and they were associated with the nucleolus.

LILIACEAE (continued)	n	2n	
<i>Hyacinthus</i> (continued)			
<i>Hyacinthus orientalis</i> var. <i>albulus</i>	16	CARRUTHERS, 1921	
" <i>orientalis</i> L. (f. <i>albulus</i> JORD. pr. sp. (Roamine blanch hort.)	16	MÜLLER, C., 1912.	
" <i>orientalis</i> Romaine blanche	16	DE MOL, 1928c; HEITZ, 1928.	
" <i>orientalis</i> var. <i>Baron von Tuyl</i>	16	" " 1921a, b, 1923a, 1928c.	
" <i>orientalis</i> var. <i>Bouquet Royal</i>	16	" " 1928c	
" <i>orientalis</i> var. <i>Cardinal Manning</i>	16	" " "	
" <i>orientalis</i> var. <i>Cardinal Wiseman</i>	27	" " 1921a, 1923a, 1928c	
" <i>orientalis</i> var. <i>City of Haarlem</i>	23	" " 1921a, b, 1923a, 1928c.	
" <i>orientalis</i> var. <i>Codro</i>	24	" " 1928c	
" <i>orientalis</i> var. <i>Daylight</i>	16	" " 1928b.	
" <i>orientalis</i> var. <i>Dr. Lieber</i>	27	" " "	
" <i>orientalis</i> var. <i>Flevo</i>	16	" " 1928c.	
" <i>orientalis</i> var. <i>Flo-ra</i>	16	" " "	
" <i>orientalis</i> var. <i>Garribaldi</i>	16	" " 1923a, 1928b, c.	
" <i>orientalis</i> var. <i>Garrick</i>	28	" " 1921a, 1923a, 1928c.	
" <i>orientalis</i> var. <i>General de Wet</i>	24	" " 1921a, 1923a, 1928c.	
" <i>orientalis</i> var. <i>General Pellissier</i>	16	" " 1921a, b, 1923a, 1928c.	
" <i>orientalis</i> var. <i>Gertrude</i>	16	" " 1921a, b, 1923a, 1928c, 1928b, 1928b, c; BELLING, 1925b	
" <i>orientalis</i> var. <i>Gigantea</i>	24	DE MOL, 1921a, 1923a, 1928c.	
" <i>orientalis</i> var. <i>Grand Maître</i>	24	" " 1921a, 1923a, b, 1928c.	

LILIACEAE (continued)

n

2n

Hyacinthus (continued)

			1926a ¹⁾ , 1927a, c, 1928b, c; DARLINGTON, 1926b.
		23	DE MOL, 1927c.
<i>Hyacinthus orientalis</i> var.			
<i>Grand Maitre giganteus</i>		24	DE MOL, 1921a, 1923a, 1928c.
" <i>orientalis</i> var. <i>Hofdijk</i>		16	" " 1928c.
" <i>orientalis</i> var. <i>Homerus</i>		16	" " 1921a, b, 1923a, 1928c.
" <i>orientalis</i> (Italian variety from Castello)		16	" " 1928c.
" <i>orientalis</i> var. <i>King of the Blues</i>		24	" " 1921a, b, c, 1923a, 1926a, 1927b, 1928c; DARLINGTON, 1926b.
	83		BELLING, 1925b, d.
" <i>orientalis</i> var. <i>King of the Blues dwarf</i> #1 ²⁾	24 ₂		" 1925.
		18	DE MOL, 1921c, 1923a, 1926a, 1927b.
" <i>orientalis</i> var. <i>King of the Blues dwarf</i> #2 ²⁾		21	DE MOL, 1921c, 1923a, 1926a, 1927b.
" <i>orientalis</i> var. <i>King of the Yellows</i>		16	DE MOL, 1928b, c.
" <i>orientalis</i> var. <i>La Grandesse</i>		28	" " 1921a, 1923a, 1928c.
" <i>orientalis</i> var. <i>La Peyrouse</i>		25-26 ³⁾	DARLINGTON, 1926b
" <i>orientalis</i> var. <i>Lady Derby</i>		24	DE MOL, 1921a, b, 1923a, 1927a, 1928c.
	12		BELLING, 1924
	83		" 1925d.

¹⁾ Though DE MOL (1926a) examined 5 different types of somatic variation (flower coloration) none was found to show a different chromosome number.

²⁾ These dwarf types originated from King of the Blues and are distinguished from it by their red violet flower color as well as their dwarf-like habit.

³⁾ This species usually had one long chromosome more than the normal triploid (2n = 24), but division figures also showed 2 extra long chromosomes, so 2n = 25, 26.

LILIACEAE (continued)	n	2n	
<i>Hyacinthus</i> (continued)			
<i>Hyacinthus orientalis</i> var. <i>L'Innocence</i>		27	DE MOL, 1921a, 1923a, b, 1923b, c.
" <i>orientalis</i> var. <i>L'Unique</i>		16	DE MOL, 1923c.
" <i>orientalis</i> var. <i>Linnaeus</i>		16	" " 1923a.
" <i>orientalis</i> var. <i>Lord Balfour</i>		24	" " 1923a, 1923c.
" <i>orientalis</i> var. <i>Marchioness of Lorne</i>		16	" " 1921a, b, 1923a, b, 1925b, 1923b, c; BELLING, 1925b.
	8	16	DE MOL, 1923b.
" <i>orientalis</i> var. <i>Morreno</i>		24 ¹⁾	DARLINGTON, 1926b; DE MOL, 1927a.
" <i>orientalis</i> var. <i>Nimrod</i>		19	DE MOL, 1921a, b, 1923a, 1923c.
" <i>orientalis</i> var. <i>Queen of the Pinks</i>		24	DE MOL, 1921a, b, c, 1926a, 1928c; DARLINGTON, 1926b.
" <i>orientalis</i> var. <i>Red Star</i>		16	DE MOL, 1923c.
" <i>orientalis</i> var. <i>Roi des Belges</i>		16	" " 1923b, c.
" <i>orientalis</i> var. <i>Sir Wm. Mansfield</i>		16	" " 1923c.
" <i>orientalis</i> var. <i>Spring Glory</i>		16	" " "
" <i>orientalis</i> var. <i>Totilla</i>		30	DE MOL, 1921a, 1923a, 1927a, 1928c.
" <i>orientalis</i> var. <i>Totula</i>		30, 31 ²⁾	DARLINGTON, 1926b.
" <i>orientalis</i> var. <i>Uncle Tom</i>		16	DE MOL, 1927a, 1928c.
" <i>orientalis</i> var. <i>Van Speyk</i> (Leo XIII)		21	" " 1921a, b, 1928c.

¹⁾ DARLINGTON (1926b) considers this to be a triploid, though in one division an extra chromosome was present.

²⁾ In some cases the tetraploid number was exceeded.

LILIACEAE (continued)	n	2n	
<i>Hyacinthus</i> (continued)			
<i>Hyacinthus orientalis</i> var. <i>Yellow Hammer</i> . .		16	DE MOL, 1921a, b, 1926b, 1928b, c.
	8		DAVENPORT, 1923; DE MOL, 1923b; BELLING, 1924, 1925d 1927e.
	8	16	DE MOL, 1928a.
" <i>orientalis</i> (Flora × <i>Romaine blanche</i>)		16	" " 1921a, 1928c.
" <i>orientalis</i> (Gertrude × <i>Yellow Hammer</i>)		24, 36	" " "
		16	" " 1926b.
" <i>orientalis</i> (L'Innocence × <i>Romaine blanche</i>)		22	" " 1921a 1928c.
" <i>orientalis</i> (Romaine blanche × <i>Flora</i> .		16	" " " "
" <i>orientalis</i> (Romaine blanche × <i>Baron von Tuyl</i>) . . .		16	" " " "
" <i>romanus</i> DESF. (= <i>Bellevalia Romanus</i>)	4		" " 1921a; BLAKESLEE, given by DAVENPORT, 1925.
<i>Bellevalia acutifolia</i> (BOISS.) .		8	DELAUNAY, 1922—3.
" <i>acutifolia</i> (BOISSIER sub <i>Muscari</i>) M. .		8 ¹⁾ , 16 ²⁾	" 1926b.
" <i>acutifolia</i> (BOISS.) DELN.	4		" 1926c.
" <i>ciliata</i> NEES.		8	" 1926b.
" <i>Fominii</i> G. WOR. . .		8	" "
	4		" 1926c.
" <i>forniculata</i> (FOMIN.).		8	" 1922—3.
" <i>forniculata</i> (FOM. sub <i>Muscari</i>) M. . .		8	" 1926b
" <i>forniculata</i> (FOM) DELN	4		" 1926c.
" <i>Romana</i>	4		DARLINGTON, 1926f.
" <i>romana</i> RCHNB. . .		8	DELAUNAY, 1926b.
" <i>speciosa</i> G. WOR. . .		8	" "
	4		" 1926c.

¹⁾ In all the cells of one plant the 8 chromosomes were present, but one „S” chromosome lacked the small „Schenkel”.

²⁾ Found in root-tip cells of one plant.

LILIACEAE (continued)	n	2n	
<i>Bellevallia</i> (continued)			
<i>Bellevallia Webbiana</i> (Hyacinthus Webbiana) . .		8	DE MOL, 1921a.
" <i>Wilhelmsii</i> (STEV.) G. WOR.		8	DELAUNAY, 1922—3.
" <i>Wilhelmsii</i> G. WOR.	4	8	" 1926c.
" <i>zygomorpha</i> G. WOR.		8	" 1925b.
	4		" "
			" 1926c.
MUSCARI MILL ¹⁾ .			
Section <i>Leopoldia</i> PARLAT.			
<i>Muscari caucasicum</i> BAKER . .		18	DELAUNAY, 1922—3, 1926b.
" <i>comosum</i> MILL ²⁾ . . .	9	18	" 1926c.
" <i>longipes</i> BOISS. . . .		18	" 1915, 1926b.
" <i>monstrosum</i> MILL. ²⁾ .	9 ³⁾	18	" 1922—3, 1926b.
" <i>tenuiflorum</i> TAUSCH. .		18	" 1826c.
"	9	18	" 1915, 1922—3, 1926b.
"		18, 20 ⁴⁾	" 1926c.
"	9 ⁵⁾		" 1926a, 1926c.
Sectio <i>Cozum</i> a e r y a n t h u s BAKER ⁶⁾			
<i>M. argaei</i> HORT. ⁷⁾ . . .		18	DELAUNAY, 1915, 1926b.
" <i>botryoides</i> MILL. . . .		36—38	MÜLLER, C., 1912.
" <i>commutatum</i> GUSS. . .		36	DELAUNAY, 1915, 1926b.
" <i>latifolium</i> F. KIRK. . .		ca. 44	" 1915.
"		45	" 1926b.
"		18, 36	" 1915.
"		18, 19 ⁸⁾ , 20 ⁹⁾ , 36 ⁹⁾	" 1926b.
" <i>neglectum</i>	24		STRASBURGER, 1888.
" <i>neglectum</i> GUSS. . . .		ca. 44	DELAUNAY, 1915.
"		45	" 1926b.
" <i>pallens</i> M.B.		36	" 1926b.
" <i>polyanthum</i> BOISS ⁷⁾ .		18	" 1915, 1926b.

¹⁾ Sections in ENGLER & PRANTL are II Botryanthus KNUTH & III Leopoldia PARLAT.

²⁾ This species showed satellites.

³⁾ In Fig. 1, one long chromosome showed one satellite attached. (DELAUNAY, 1926a)

⁴⁾ In two individuals, 2 extra (d) chromosomes were found.

⁵⁾ In Fig. 1 one long chromosome shows 2 satellites attached (DELAUNAY, 1926a).

⁶⁾ DELAUNAY (1926b) is uncertain about the correctness of placing the species here included, other than *M. latifolium* and *M. pallens*, in this section.

⁷⁾ This species showed satellites.

⁸⁾ Found in one individual.

⁹⁾ Found in two individuals.

LILIACEAE (continued)		n	2n	
<i>Muscari racemosum</i> MILL.			ca. 44	DELAUNAY, 1915.
			45	" 1926b.
<i>Veltheimia</i> sp. (?)			20	MÜLLER, C., 1912.
<i>Lachenalia</i> sp. (?)			18-20	" " 1912.
<i>Yucca aloifolia</i> L.			54-56	" " 1910.
" <i>draconis</i> TOIR.			54-56	" " "
" <i>glauca</i> NUTTALL.				
(= <i>Y. angustifolia</i>)				
PURSH.)	6			FOLSON, 1916.
" <i>gloriosa</i>	10+ ¹⁾			BONNET, 1912.
" <i>guatemalensis</i> BAVK. (=				
<i>Y. Roezlii</i> hort).			54-56	MÜLLER, C., 1910.
" <i>recurva</i> SALISB.	25-27			WOYCICKI, 1911.
			54	" 1925.
" sp. (?)			44-46	MÜLLER, C., 1912.
<i>Dasyllirion acotrichum</i> ZUCC.			20-24	WENT & BLAAUW, 1905.
<i>Sansevieria cylindrica</i>			102-104	HEITZ, 1926.
<i>Clintonia borealis</i>	ca. 12		ca. 20	SMITH, R. W., 1911.
<i>Smilicina racemosa</i>	24			MACALLISTER, 1913.
" <i>racemosa</i> (L.) DESF.	20-24			WOOLERY, 1915.
" <i>stellata</i> (L.) DESF.	12		24	MACALLISTER, 1906.
<i>Maianthemum bifolium</i>	14			LAWSON, 1913.
<i>Disporum Hookeri</i> NICHOLS.	5			" 1912. AKESLE
<i>Salomonina biflora</i> (WATT.) BRI-				RT, 192
TON	7-8			CARDIFF, 1906.
<i>Polygonatum multiflorum</i> ALL.	12			VON BÖNICKE, 1911.
<i>Convallaria majalis</i>	16			STRASBURGER, 1888
" <i>majalis</i> L.	18			WIEGAND, 1899.
	18		ca. 36	" 1900.
	16			SAUER, 1909.
<i>Rhodea japonica</i> ROTH et				
KUNTH.	14			TAKAMINE, 1916.
<i>Aspidistra (Plectogyne)</i>			8	MÜLLER, C., 1912.
" spec.			ca. 32	HEITZ, 1926.
<i>Medeola virginiana</i>	7			ISHIKAWA, 1916.
<i>Paris quadrifolia</i>	12			ERNST, 1902; BOLLES, LEE,
				1925.
<i>Trillium grandiflorum</i>	ca. 6			ATKINSON, 1899.
	6			ERNST, 1902.
			12	GRÉGOIRE, 1912.
" <i>recurvatum</i>	6		12	COULTER & CHAMBERLAIN, 1903
" sp. (?)				KOMURO, 1924.
<i>Liriope graminifolia</i> BAK. var.				
<i>communis</i> MAXIM.	ca. 36			SHIMOTOMAI, 1927.

¹⁾ There were 10 „megachromosomes” and at least 40 small chromosomes.

LILIACEAE (continued)	n	2n	
<i>Ophiogon intermedius</i> DON.	56		DUDGEON, 1922.
<i>Smilax herbacea</i>	12		HUMPHREY, 1914.
	12-13		ELKINS, 1914
AMARYLLIDACEAE			
<i>Haemanthus</i> (?)		16-18	MÜLLER, C., 1912.
" <i>albiflorus</i>		16 ¹⁾	HEITZ, 1926.
" <i>Catherinae</i>		16 ¹⁾	" "
" <i>coccineus</i> var. <i>co-</i>			
<i>arctatus</i>		(14)-(16 ¹⁾)	" "
" <i>jimbriatus</i>		16-(18) ¹⁾	" "
" <i>Katharinae</i>	ca. 12		SVENSSON-STENAR, 1925.
	9 ²⁾	18	WOYCICKI, 1923.
" <i>Katharinae</i> BAK.	8 ³⁾		" 1927.
" <i>multiflorus</i>		16-(18) ¹⁾	HEITZ, 1926.
" <i>pubescens</i> var. <i>hir-</i>			
<i>sutus</i>		(14)-(16 ¹⁾)	" "
<i>Galanthus cilicicus</i>		24	" "
" <i>Elwesii</i>		24	" "
" <i>Elwesii robustus</i> var.			
<i>praecox</i>		24	" "
" <i>nivalis</i>	12		SVENSSON-STENAR, 1925.
		24	HEITZ, 1926.
<i>Leucojum aestivum</i>		20-24	" "
" <i>autumnale</i>		14	" "
" <i>pulchellum</i>		20-24	" "
" <i>vernum</i>	12	24	OVERTON, E., 1893a.
		20	HEITZ, 1926.
<i>Nerine curvifolia</i>		22-(24)	" "
" <i>pusilla</i>		ca. 24	" "
" <i>rosea</i> HERB.		22	MÜLLER, C., 1912.
" <i>sarniensis</i>		22-(24)	HEITZ, 1926.
" <i>undulata</i>		22	" "
<i>Ungernia Severzovii</i> B.			
FEDTSCH		24 ⁴⁾	BARANOV & PODDUBNAJA, 1925
<i>Atamosco texana</i> GREENE (=			
<i>Zephyranthes texana</i>)	12		PACE, 1913.
<i>Eucharis Amazonica</i>	ca. 45		SVENSSON-STENAR, 1925.
<i>Narcissus biflorus</i> Curt. (= <i>N.</i>			
<i>peticus</i> × <i>N. ta-</i>			
<i>zetta</i>		24	STOMPS, 1919.

¹⁾ The chromosome complex for this species is considered to be: 1L1, 2-3 Lk, 0-1 l, 2-3 IK, 2Kk.

²⁾ The chromosome complex for this species is 1L1, 2Lk, 1L, 2lk, 1 l, 2k.

³⁾ The chromosomes were described as 3 mega- and 5 micro-chromosomes.

⁴⁾ A certain number of the chromosomes were said to have satellites.

AMARYLLIDACEAE	n	2n	
<i>Narcissus</i> (continued)			
<i>Narcissus Balbocodium</i>		42	HEITZ, E., 1926.
„ <i>incomparabilis</i>		14	„ „ „
„ <i>multiflorus</i> „Ideal”		32	„ „ „
„ <i>poeticus</i> L.		16	STOMPS, 1919.
„ <i>poeticus</i>	7	14	DE MOL 1928a.
„ <i>poeticus ornatus</i>		16	STOMPS, 1919.
„ <i>poeticus poetarum</i>		16	„ „
„ <i>poeticus</i> var. „Albion”		16	„ „
„ <i>poeticus</i> var. „Glory of Lisse”		16 ¹⁾	„ „
„ <i>Poeticus</i> var. <i>Glorie van Lisse</i>	7		DE MOL 1928a.
„ <i>Pseudonarcissus</i>	7	14	DE MOL 1928a.
„ <i>Pseudonarcissus</i> × <i>Narcissus poeticus</i>		28	DE MOL, 1926a, 1927c.
		14	„ „ 1927c.
<i>Pancratium ceylanicum</i>		90-100	HEITZ, 1926.
„ <i>speciosum</i>		ca. 90	„ „
<i>Hippeastrum rutilum</i> B. <i>fulgidum</i>		(22)-24	„ „
<i>Lycoris radiata</i> HERB. ²⁾	113	33	NISHIYAMA, 1928b
„ <i>sanguinea</i> MAXIM.	11	22	„ „
<i>Agave americana</i> L.		20	MÜLLER, C., 1912.
„ <i>virginica</i> L.	12		SCHAFFNER, 1909.
„ <i>virginica</i> (?)	12	24	MÜLLER, C., 1912.
<i>Fourcroya altissima</i>		ca. 50	HEITZ, 1926.
„ <i>Lindenii</i>		ca. 40	„ 1926.
<i>Beschornea superba</i> HORT (?)		ca. 50	MÜLLER, C., 1912.
<i>Alstroemeria braziliensis</i> SPRENG.	8		TAYLOR, 1926.
„ <i>chilensis</i> LODD.	8		STRASBURGER, 1882.
„ <i>pelegrina</i> L.	8		GUIGNARD, 1884.
„ (?)	8		„ 1889; STRASBURGER 1888.
„ <i>psittacina</i>	8		GUIGNARD, 1891b.
„ <i>psittacina</i> (= <i>A. pulchella</i>)	9		SVENSSON-STENAR, 1925.
<i>Curculigo recurvata</i>	ca. 10		„ „ „
<i>Anigosanthus flavidus</i> Red. Lil. . . .	6		STENAR, 1927a.

¹⁾ Occasionally 14 chromosomes were found.

²⁾ This species shows very irregular meiotic divisions.

DIOSCOREACEAE

<i>Dioscorea caucasica</i> LIPSKY . . .	10	MEURMAN, 1925a, b.
" <i>sinuata</i>	12	SUSSENGUTH, 1920.
	ca. 12	" 1921.
" <i>sinuata</i> VELL.	17-18	MEURMAN, 1925a, b.
<i>Tamus communis</i> L.	24	" 1925a, b.

IRIDACEAE

<i>Crocus asturicus</i>	(22)-24	HEITZ, 1926.
" <i>cancellatus</i>	5	10 " "
" <i>iridiflorus</i>		24-(26) HEITZ, 1926.
" <i>pulchellus</i>		12 " "
" <i>sativus</i> L.		24 HIMMELBAUR, 1926.
" <i>Tomasianus</i>	ca. 18	HEITZ, 1926.

IRIS¹⁾.Section *Onocylus*

<i>Iris atropurpurea</i> BAKER. . .	20	SIMONET, 1928c.
" <i>Lortetii</i> BARBEY	20	" "
" <i>Sari</i> SCHOTT	20	" "
" <i>soforana</i> FOSTER	20	" "

Section *Pogoniris*

<i>Iris chamaeiris</i> BERTOL. . . .	40	SIMONET, 1928a.
" <i>cypriana</i> FOSTER et BAKER	24	48 " "
	24	" "
<i>Iris pallida</i>	12	MIYAKE, 1905
" <i>pallida</i> LAM.	12	24 SIMONET, 1928a.
	12	" 1928b.
" <i>pallida</i> var. <i>dalmatica</i> . .	12+few ¹	LONGLEY, 1928.
" <i>pumila</i> L. var. <i>coerulea</i>		
hort.	40	SIMONET, 1928a.
" <i>variegata</i> L.	12	24 " "

Section *Evansia*

<i>Iris tectorum</i> MAXIM.	28	SIMONET, 1928a.
-------------------------------------	----	-----------------

Section *Apogon*

<i>Iris acoroides</i> SPACH.	17	34 SIMONET, 1928a.
" <i>aurea</i> LINDL.	20	40 " "
" <i>desertorum</i>	12	GUIGNARD, 1891b.
" <i>desertorum</i> HORT.	16	SIMONET, 1928a.
" <i>foetidissima</i> L.		40 " "
" <i>fulva</i> KER-GAWL.	21	42 " "
" <i>graminea</i> L.	17	34 " "
" <i>Kaempferi</i> SIEBOLD	12	24 " "
" <i>Kaempferi</i> var. <i>hortensis</i>		
MAKINO.	12	24 KAZAO, 1928.

¹⁾ The following species are classified under sections according to DYKES (1913).

IRIDACEAE (continued)	n	2n	
<i>Iris</i> (continued)			
<i>Iris Kaempferi</i> var. <i>spontanea</i>			
MAKINO	12	24	KAZAO, 1928.
„ <i>mandschurica</i>	20 ±		LONGLEY, 1928.
„ <i>mandshurica</i> hort.	17	34	SIMONET, 1928a
„ <i>musulmanica</i> FOMIN.	22	44	„ „
„ <i>ochroleuca</i> L.	20	40	„ „
„ <i>orientalis</i> THUNB.	14	28	SIMONET, 1923a
„ <i>pseudacorus</i>	12		STRASBURGER, 1900; MIYAKI 1905; LONGLEY, 1928.
„ <i>pseudacorus</i> L.	17	34	„ „
„ <i>ruthenica</i> DRYAND		> 100	„ „
„ <i>sibirica</i> L.	14	28	„ „
„ <i>sibirica</i> var. <i>orientalis</i> MA- KINO	14	28	KAZAO, 1928.
„ <i>spuria</i>	12		MIYAKE, 1905.
„ <i>spuria</i> L. var. <i>alba</i> hort.	22	44	SIMONET, 1928a.
„ <i>unguicularis</i> POIR.		38	„ „
„ <i>versicolor</i> L.	ca. 56 ¹⁾		„ „
„ <i>versicolor</i> (from Alabama)			
	ca. 36		LONGLEY, 1928.
„ <i>versicolor</i> (from North Caro- lina)	42		„ „
„ <i>versicolor</i> (from Rosslyn, Va.)	44 + 17 ²⁾		„ „
„ <i>virginica</i> L.	ca. 56 ¹⁾		SIMONET, 1928a.
Section <i>Reticulata</i>			
<i>Iris reticulata</i> BIEB.		20	SIMONET, 1928a.
Section <i>Xiphion</i>			
<i>Iris filifolia</i> HORT. var. <i>La</i>			
France ³⁾	17	34	SIMONET, 1928a.
„ <i>junccea</i> , POIR		32	„ 1928c.
„ <i>lusitanica</i> KER-GAWL		34	„ „
„ <i>tingitana</i> BOISS.		42	„ 1928a.
„ <i>xiphioides</i> EHRH.		42	„ 1928c.
„ <i>xiphium</i> L. ³⁾		34	„ „
Section <i>Regelia</i>			
<i>Iris Hoogiana</i> DYKES		44	SIMONET, 1928c.
„ <i>Korolkowi</i> REGEL		44	„ „

¹⁾ The diploid number was not exactly determined in this species.

²⁾ Three other forms, collected in Massachusetts and Nova Scotia, also showed univalent as well as bivalent chromosomes.

³⁾ *Iris filifolia* HORT. var. *La France* investigated by SIMONET 1928a was a form of *Iris xiphium praecox*.

IRIDACEAE (continued)		n	2n	
<i>Iris</i> (continued)				
<i>Iris stolonifera</i> MAXIM			44	SIMONET, 1928c.
„ <i>vaga</i> FOSTER			44	„ „
Section <i>Juno</i> .				
<i>Iris bucharica</i> FOSTER			22	SIMONET, 1928c.
Section <i>Gynandiris</i>				
<i>Iris sisyrinchium</i> L.			24	SIMONET, 1928a.
Section (?) ¹⁾				
<i>Iris cristata</i>	12			LONGLEY, 1928.
„ <i>ensata</i>	20			„ „
„ <i>flavescens</i> var. <i>baxteri</i> . . . 12+few ₁				„ „
„ <i>flavescens</i> var. „Canary bird” 12+few ₁				„ „
„ <i>florentina</i>	12			MIYAKE, 1905.
„ <i>florentina</i> L.	12			SIMONET, 1928b.
„ <i>florentina</i> A. GRAY. 16 ₃ ²⁾		48		KAZAO, 1928.
„ <i>germanica</i>	12			STRASBURGER, 1900.
„ <i>germanica</i> HORT.	12			SIMONET, 1928b.
„ <i>germanica</i> var. <i>atropurpurea</i> 12+10? ₁				LONGLEY, 1928.
„ <i>germanica</i> HORT. var. <i>Calypso</i>		24		SIMONET, 1928b.
„ <i>germanica</i> var. <i>Kharput</i> . . . 12+few ₁				LONGLEY, 1928.
„ <i>germanica</i> var. <i>King Edward VII</i> 12+few ₁				„ „
„ <i>germanica</i> HORT. var. <i>Lord Mayor</i>		24		SIMONET, 1928b.
„ <i>germanica</i> HORT. var. <i>Mme Chereau</i>		24		„ „
„ <i>germanica</i> var. <i>Purple King</i> 12+several ₁				LONGLEY, 1928.
„ <i>germanica</i> var. <i>Purple Prince</i> 12+19? ₁				LONGLEY, 1928.
„ <i>gracilipes</i> L.	18	36		KAZAO, 1928.
„ <i>japonica</i> THUNB.		54		„ „
„ <i>laevigata</i> FISH. et MEY. 16		32		„ „
„ <i>lurida</i> SOLAND	12			SIMONET, 1928b.
„ <i>macrantha</i> HORT. (AMAS) 24				„ „
„ <i>neglecta</i> HORN.	12			SIMONET, 1928b.
„ <i>plicata</i> LAM.	12			SIMONET, 1928b.
„ <i>sambucina</i> L.	12			SIMONET, 1928b.
„ <i>sambucina</i> var. <i>Mephistopheles</i> 12+few ₁				LONGLEY, 1928.

¹⁾ The following species were not classified under sections.²⁾ Late diakinesis of pollen mother cell division showed about 16 trivalent chromosomes.

IRIDACEAE (continued)	n	2n	
<i>Iris</i> (continued)			
<i>Iris squalens</i>	12		STRASBURGER, 1900.
" <i>trojana</i> A. KERN.	24		SIMONET, 1928b.
" <i>variegata</i> L.	12		" "
" <i>variegata</i> var. <i>Mrs. E. A.</i>			
Barr	12+few ₁		LONGLEY, 1928.
" <i>variegata</i> var. <i>Princess of</i>			
Teck	12+few ₁		" "
" <i>variegata</i> var. <i>Samson</i> . .	12+few ₁		" "
" sp. (?) varieties:			
<i>Allies</i> HORT.		ca. 30	SIMONET, 1928b.
<i>Ambassadeur</i> HORT.	12	48-50	" "
<i>Ballerine</i> HORT.		36	" "
<i>Jacquesiana</i>	12+2 ₁		LONGLEY, 1928.

LONGLEY (1928) for a number of *Iris* varieties gives the following approximate chromosome numbers:

n = 12+ few univalents:

Calypso; *Caprice*; *Count de St. Claire*; *Delicata*; *Kkedive*; *La Tendresse*; *Leonidas*; *L'esperance*; *Mandalisca*; *Mme Chereau*; *Mme Pacquette*; *Morphee*; *Mrs. G. Darwin*; *Mrs. H. Darwin*; *Penelope*; *Rembrandt*; *Sir Walter Scott*; *Unique*.

n = 12+ some univalents:

Amabilis; *Neglecta*; and *William Wallace*.

n = 12+ several univalents: *Her Majesty*.

<i>Iris Pseudacorus</i> × <i>I. versicolor</i>	24 ¹⁾	SAWYER, 1925.
<i>Hermodactylus tuberosus</i> MILL.	20	SIMONET, 1928a.
<i>Sisyrinchium striatum</i> SM. . .	9	DE VILMORIN & SIMONET, 1927b
<i>Dierama pendulum</i> BAKER . .	10	" " " "
<i>Gladiolus primulinus</i> hyb. var.		
hort. <i>La Muerthe</i>	30	" " " "
<i>Freesia refracta</i> KLATT. . . .	22	TAYLOR, 1926.

SCITAMINEAE

MUSACEAE

<i>Musa acuminata</i> var. <i>Simiarum</i>	22(?)	WHITE, 1928.
" <i>basjoo</i> SIEB. et ZUCC. . . .	11	D'ANGREMOND, 1914.
" <i>basjoo</i> var. <i>Alisanag</i> . . .	24	WHITE, 1928.
" <i>basjoo</i> var. <i>Manang</i>	24	" "
" <i>basjoo</i> var. <i>Martini</i>	24	" "
" <i>basjoo</i> (?) var. <i>Lidi</i>	23	" "
" <i>basjoo</i> (?) var. <i>Rodoc</i>		
<i>Clamp</i>	24	" "
" <i>Cavandishii</i> var. <i>Bungulan</i>		
(TUMOC)	32	" "

¹⁾ This number of chromosomes was found arranged in pairs in the one-celled zygote.

MUSACEAE (continued)	n	2n	
<i>Musa</i> (continued)			
<i>Musa Cavendishii</i> var. <i>Chinese</i>		32	WHITE, 1928.
" <i>Cavendishii</i> var. <i>Pool</i> . .		32	" "
" <i>Cliffortiana</i> var. <i>asperma</i>		24	" "
" <i>Crachycarpa</i> var. <i>Back</i>			
#72.		24	" "
" <i>ensele</i> var. <i>Abyssinian</i> .		20	" "
" <i>Gilletti</i>		18(?)	" "
" <i>ornata chittagong</i> . . .	11		D'ANGREMOND, 1914.
" <i>paradisiaca</i> var. <i>Black</i>			
<i>Stemmed Gros Michel</i> . .		32	WHITE, 1928.
" <i>paradisiaca</i> var. <i>Black</i>			
<i>Stemmed Horse Plantain</i>		32	" "
" <i>paradisiaca</i> var. <i>Black</i>			
<i>Stemmed Maiden Plant</i>		32	" "
" <i>paradisiaca</i> var. <i>Burro</i>			
<i>Apple Plantain</i>		32	" "
" <i>paradisiaca</i> var. <i>Cenizo</i>			
<i>Apple Plantain</i>		32	" "
" <i>paradisiaca</i> var. <i>Chama-</i>			
<i>luco Apple Plantain</i> . .		32	" "
" <i>paradisiaca</i> var. <i>Congo</i> .		32	" "
" <i>paradisiaca</i> var. <i>Dwarf</i>			
<i>Horse Plant</i>		32	" "
" <i>paradisiaca</i> var. <i>Giant</i>			
<i>Fig</i>		32	" "
" <i>paradisiaca</i> var. <i>Green</i>			
<i>Red</i>		32	" "
" <i>paradisiaca</i> var. <i>Gros Mi-</i>			
<i>chel</i> ¹⁾		32	" "
" <i>paradisiaca</i> var. <i>Guyuran</i>		32	" "
" <i>paradisiaca</i> var. <i>Horse</i>			
<i>Plantain</i>		32	" "
" <i>paradisiaca</i> var. <i>Laca-</i>			
<i>lan</i> ¹⁾		32	" "
" <i>paradisiaca</i> var. <i>Maiden</i>			
<i>Plant</i>		32	" "
" <i>paradisiaca</i> var. <i>Marta-</i>			
<i>bon Dacca</i>		24	" "
" <i>paradisiaca</i> var. <i>Red</i> . .		32	" "
" <i>paradisiaca</i> var. <i>Red</i>			
<i>plantain</i>		32	" "

¹⁾ Three varieties, from Panama, Venezuela and Gros Michel (?), of Sierra Leon were investigated, as were three varieties of *Lacatan* from the same countries.

MUSACEAE (continued)	n	2n	
<i>Musa</i> (continued)			
<i>Musa paradisiaca</i> var. <i>seminifera</i>		24	WHITE, 1928.
„ <i>paradisiaca</i> (?) var. F. H. B. 57246.		32	„ „
„ <i>rosacea</i>	12	24	TISCHLER, 1921-22.
„ <i>sanguinea</i>		24	WHITE, 1928.
„ <i>sapientium</i> var. „ <i>Appelbacove</i> ”	11-12		„ „
„ <i>sapientium</i> var. <i>Dole</i>	8		D'ANGREMOND, 1914.
„ <i>sapientium</i> var. „ <i>Gros Michel</i> ”	16		TISCHLER, 1910.
„ <i>sapientium</i> var. <i>Kladi</i>	24		D'ANGREMOND, 1914.
„ <i>sapientium</i> var. <i>Radjah Siam</i>	16		TISCHLER, 1910.
„ <i>textilis</i> var. <i>Bungulanon</i>		20	„ „
„ <i>textilis</i> var. <i>Libuton</i>		20	WHITE, 1928.
„ <i>textilis</i> var. <i>Maguindanas</i>		20	„ „
„ <i>textilis</i> var. <i>Puteean</i>		20	„ „
„ <i>textilis</i> var. <i>Sinaba</i>		22	„ „
„ <i>textilis</i> var. <i>Tangongon</i>		20	„ „
„ <i>Zebrina</i>		24	„ „
„ <i>Zebrina</i> var. <i>cerifera</i>		24	„ „
„ sp. (?) ¹⁾		12	„ „
„ <i>paradisiaca</i> (?) ²⁾ varieties:		36	„ „
<i>Amrita</i> Sogar; <i>Bangalan</i> #1; <i>Bluefield</i> ; <i>Brazilian</i> ; <i>Bumulan</i> ; <i>Chek Tuk</i> ; <i>Chevalier</i> ; <i>Chuoï Cau Tay</i> ; <i>Chuoï Cau Xiem</i> ; <i>Chuoï Gia Cui</i> ; <i>Chuoï Gia Lung</i> ; Coll. #106; Coll. #111; <i>Embun</i> ; <i>Kale</i> ; <i>Kanara</i> ; <i>Kelat</i> ; <i>Klui Hom Keo</i> ; <i>Laknau</i> ; <i>Masak Hijau</i> ; <i>Nand Aboeboe</i> ; <i>Nand. Kabaker</i> ; <i>Pisang Ambon Loemoet</i> ; <i>Pisang Ambon Poetih</i> ; <i>Pisang Mangsan</i> ; <i>Pisang Masan</i> ; <i>Pisang Sangate</i> ; <i>Pisang Seroeanta</i> ; <i>Pisang Sri</i> ; <i>Pisang Sri Bali</i> ; <i>Rotan</i> ; <i>Sabang Castila</i> ; <i>Susu</i> ; <i>Tandoek Kambing</i> ; <i>The Hmwe</i> ; (<i>Unid</i>) <i>Vima-ma</i> type.			
<i>Musa</i> sp. (?) ³⁾ varieties			
<i>Ambong Koerik</i>		32	WHITE, 1928.
<i>Baloko</i>		32	„ „
<i>Bastard Hemp</i>		24	„ „
<i>Bat Nose</i>		32	„ „

¹⁾ The species though unidentified showed resemblances to *M. basjoo* and *M. seminiifera*.

²⁾ WHITE (1928) states that the following 36 clones having $2n = 36$ were for the most part considered as varieties of *Musa paradisiaca*.

³⁾ WHITE (1928) has not named the species of the following varieties.

MUSACEAE (continued)	n	2n	
<i>Musa</i> sp. (?) varieties (continued)			
<i>Bayalany</i>	20		WHITE, 1928.
<i>Bolo</i>	24	"	"
<i>Butuan</i>	32	"	"
<i>Chek Ambong Plok</i>	32	"	"
<i>Chek Ambong Sneng</i>	32	"	"
<i>Chek Pong Man Pluc</i>	24	"	"
<i>Chuai Cau Trang</i>	24	"	"
<i>Chuai Cha</i>	32	"	"
<i>Chuai Gia Huong</i>	32	"	"
<i>Chuai Tien Huong</i>	24	"	"
<i>Coolie Honghseng</i>	24	"	"
<i>Decosta White</i>	32	"	"
<i>Djantan</i>	24	"	"
<i>Dorado</i>	28	"	"
<i>Galimba Pula</i>	24	"	"
<i>Guineo Prieto</i>	32	"	"
<i>Inarna</i>	22(?)	"	"
<i>Inarnibal</i>	24	"	"
<i>Kacoloon</i>	24	"	"
<i>Kalibo</i>	32	"	"
<i>Kapas</i>	32	"	"
<i>Klui Kran</i>	24	"	"
<i>Lady Finger</i>	24	"	"
<i>Manzana</i>	32	"	"
<i>Martinique</i>	32	"	"
<i>Masak Sahari</i>	32	"	"
<i>Morong Datu</i>	24	"	"
<i>Morong Principe</i>	32	"	"
<i>Morado Pula</i>	32	"	"
<i>Morado Puti</i>	32	"	"
<i>#20 Munden</i>	24	"	"
<i>Nandow Kababar (A)</i>	20	"	"
<i>Nandow Kababur (B)</i>	24	"	"
<i>Nandow Mamboef Diodi</i>	32	"	"
<i>Pacol</i>	24	"	"
<i>Pisang Boeloei</i>	32	"	"
<i>Pisang Cocos</i>	32	"	"
<i>Pisang Galipapo</i>	32	"	"
<i>Pisang Kawahi (Galela)</i>	24	"	"
<i>Pisang Kawahi (Tobelo)</i>	24	"	"
<i>Pisang Pandok Beureum</i>	24	"	"
<i>Pomme Java</i>	32	"	"
<i>Pulutan</i>	24	"	"
<i>Putran</i>	24	"	"

MUSACEAE (continued)	n	2n	
<i>Musa</i> sp. (?) ¹⁾ varieties (continued)			
<i>Raja</i>	32	WHITE, 1928.	
<i>Sabang Tagolog</i>	24	" "	
<i>Serendeh</i>	32	" "	
<i>Sinaroksoh</i>	24	" "	
<i>Tadio</i>	32	" "	
<i>Ta Ni Pa</i>	32	" "	
<i>Tiparot</i>	40	" "	
<i>Tudoc</i>	32	" "	
(Unid.) <i>Sanderson's</i>	24	" "	
(Unid.) from Fr. Indo-China	32	" "	
(Unid.) from Porto Rico . . .	32	" "	
<i>Valery</i>	32	" "	
<i>Viente Cohol</i>	24	" "	
<i>Vi-ma-ma</i>	32	" "	
<i>Yale Bale</i>	24	" "	
<i>Musa</i> sp. (?) „Alisanay” × <i>M.</i> <i>seminifera</i>	24	" "	
„ sp. (?) „Apple Plaintain” × <i>M.</i> „Bastard Hemp”	28	" "	
	32	" "	
„ sp. (?) „Bastard Hemp” × <i>M. seminifera</i>	24	" "	
	23	" "	
„ sp. (?) „Martini” × <i>M.</i> <i>seminifera</i>	24	" "	
„ hybrid „Dunlap's Seed- ling”	40	" "	
ZINGIBERACEAE			
<i>Zingiber officinale</i>	22	SUGIURA, 1928a.	
CANNACEAE			
<i>Canna</i> sp. (?)	6	GRÉGOIRE, 1912.	
„ <i>flaccida</i>	18	HEITZ, 1926.	
„ <i>glauca</i>	9	HONING, 1923.	
„ <i>indica</i> L.	3	6 WIEGAND, 1900.	
„ <i>indica</i>	8	KOERNICKE, 1903.	
	9 ²⁾	HONING, 1923.	
	9 ³⁾	BELLING, 1921.	
	27 ³⁾	" "	
	$\frac{2}{2}$		

¹⁾ See footnote 3, page 408

²⁾ HONING (1923) states that in 1915 he had found $2n = 16$.

³⁾ According to TISCHLER (1921—22) Kuwada had determined in 1918 and verbally reported that 18 and 27 were the diploid numbers of *Canna indica*.

CANNACEAE (continued)		n	2n	
<i>Canna</i> (continued)				
				18 ¹⁾ HEITZ, 1926.
		9	18	TOKUGAWA & KUWADA ²⁾ , 1924.
			27	" " " 1924.
<i>Canna indica</i> var. Firebird. . .	9 ₃			BELLING, 1925c.
" <i>indica</i> var. Gladiator. . .	9 ₃			" "
" <i>indica</i> var. Pennsylv-				" "
nia	variable,			" "
	tri, bi &			
	univalents			
MARANTACEAE				
<i>Maranta sanguinea</i>	12			SUSSENGUTH, 1920.
" sp.	16			VON BOENICKE, 1911.
<i>Thalia dealbata</i>		12		SUSSENGUTH, 1921.
MICROSPERMAE				
BURMANNIACEAE				
<i>Thismia clandestina</i> ³⁾	6-8			MEYER, K., 1909.
<i>Burmannia candida</i>	12			ERNST & BERNARD, 1912;
				SCHOCH, 1920.
" <i>championii</i>	12			ERNST & BERNARD, 1912.
	32-36			SCHOCH, 1920.
" <i>coelestis</i> DON.	30-36			ERNST & BERNARD, 1912.
" <i>coelestis</i>	32-36			SCHOCH, 1920.
" <i>disticha</i>	20-22			" "
ORCHIDACEAE				
	n	2n		
<i>Cypripedium barbatum</i>	16	32		STRASBURGER, 1888
" <i>insigne</i>		24-36		HEITZ, 1926.
" <i>parviflorum</i>	11			PACE, 1907.
" <i>pubescens</i>	11			" "
" <i>spectabile</i>	11			" "
<i>Paphiopedilum insigne</i>	ca. 12			AFZELIUS, 1916.
	8-9			SUSSENGUTH, 1920.
<i>Ophrys myodes</i> JACQ.	11-12			SEMIANINOVA, 1925.
<i>Orchis maculata</i>	16			STRASBURGER, 1888.
	10	20		FUCHS & ZIEGENSPECK, 1924.
<i>Himantoglossum hircinum</i>	16			STRASBURGER, 1888.
" <i>hircinum</i> SPR.	12			HEUSSER, K., 1915.
<i>Herminium monorchis</i> R. BR.	12-13	24-26		BARANOV, 1925.
<i>Nigritella nigra</i>	30	60		AFZELIUS, 1928.

¹⁾ Two garden varieties were examined.²⁾ For names of varieties investigated by TOKUGAWA & KUWADA (1924) see GAISER (1926).³⁾ ERNST & BERNARD believe that MEYER investigated *Thismia javanica*.

ORCHIDACEAE (continued)

<i>Epipactis falcata</i>		24	SUGIURA, 1928a.
" <i>palustris</i>	12		FRIEMANN, 1910.
<i>Gastroda elata</i>	8-9	16-18	KYSANO, 1915.
<i>Spiranthes australis</i>	12		TAKAMINE, 1916.
<i>Gyrostachys cernua</i>	30		PACE, 1914.
" <i>gracilis</i>	15		" "
<i>Listera ovata</i>	16		GUIGNARD, 1891b; ROSENBERG, 1905.
" <i>ovata</i> R. BR.	16	34	GREGOIRE, 1912.
" <i>sp.</i> (?)	16	32-34	GUIGNARD, 1884.
<i>Nicotia nidus avis</i>	16		MÜLLER, C., 1912.
" <i>nidus avis</i> RICH	18		GUIGNARD, 1889.
<i>Calopogon pulchellus</i> R. BR. . ca. 13			GUIGNARD, 1884.
<i>Zygopetalum Mackayi</i> HOOK . ca. 24		ca. 26	MODILEWSKI, 1918.
<i>Cymbidium Lowianum</i>	9-10		PACE, 1909.
<i>Oncidium praetextum</i> RCHB. fil. . 28			SUSSENGUTH, 1923.
<i>Ionopsidium acaule</i> RCHB. . . 12		24	" 1920.
" <i>Savanium</i> (CAR.)			AFZELIUS, 1916.
BALL	16	32	CHIARUGI, 1928.
<i>Gymnadenia conopsea</i>	(16)?		" "
	8		STRASBURGER, 1888.
	10	20	CHODAT, 1924.
			FUCHS & ZIEGENSPECK, 1924.

BIBLIOGRAPHY

- AASE, H. C. & L. POWERS, 1926. — Chromosome numbers in crop plants. Amer. Jour. Bot. 13; 367—72, Pl. XXIX, XXX.
- ABELE, K. 1924. — Untersuchungen an Gametophyten von *Peperomia incana*. Bot. Arch. 7; 3—4, 321—4.
- AFZELIUS, K. 1916. — Zur Embryosackentwicklung der Orchideen. Svensk. Bot. Tids. 10; 183—227.
- AFZELIUS, K. 1928. — Die Embryobildung bei *Nigritella Nigra*. Svensk. Bot. Tids. 22; 82—91.
- ÅKERLUND, E. 1927. — Ein *Melandrium* Hermaphrodit mit weiblichen Chromosomenbestand. Hereditas 10; 153—9.
- ALLEN, C. E. 1904. — Chromosome reduction in *Lilium canadense*. Bot. Gaz. 37; 464—70.
- ALLEN, C. E. 1905a. — Das Verhalten der Kernsubstanzen während der Synapsis in den Pollen-Mutterzellen von *Lilium canadense*. Jahr. Wiss. Bot. 42; 72—82, Pl. II.
- ALLEN, C. E. 1905b. — Nuclear division in the pollen-mother-cells of *Lilium canadense*. Ann. Bot. 19; 189—258, Pl. VI—IX.
- ALLEN, I. M. 1924. — The cytology of *Matthiola incana* with reference to the genetics of certain cultivated varieties. New Phytol. 23; 103—12.
- ANDREWS, F. M. 1901. — Karyokinesis in *Magnolia* and *Liriodendron* with special reference to the behavior of the chromosomes. Beih. Bot. Centralbl. 11; 134—42, Pl. I.
- D'ANGREMOND, A. 1914. — Parthenokarpie und Samenbildung bei Bananen. Flora 107; 57—110, Pl. IV—XI.
- ARMAND, L. 1912. — Fécondation et développement de l'embryon chez les Lobéliacées. C. R. Acad. Sci. Paris 155; 1534—6.
- ARTSCHWAGER, E. 1927. — Development of flowers and seed in the sugar beet. Jour. Agr. Res. 34; 1—25.
- ASAMI, Y. 1927. — Pollen abortion in the Shanghai peach. Jour. Sci. Agr. Soc. Komaba, Tokyo; 364—73, Pl. I—V.
- ASCHERSON, P. F. & P. GRAEBNER. 1906—1910. — Synopsis der Mitteleuropäischen Flora. VI, B. Leipzig.
- ASPLUND, E. 1920. — Studien über die Entwicklungs-geschichte der Blüten einiger Valerianaceen. K. Svensk. Vet. Akad. Handl. 61; 3, 1—66.
- ATABEKOR, A. 1925. — Materials for a monographic study of a new species of

- cultivated wheat *Triticum persicum* Vav. Bull. Appl. Bot. & Plant Breed. 15; 161—198.
- ATKINSON, G. F. 1899. — Studies on reduction in plants. Bot. Gaz. 28; 1—26, Pl. I—VI.
- BABCOCK, E. B. 1915. — Walnut mutant investigations. Proc. Nat. Acad. Sci. 1; 535—7.
- BABCOCK, E. B. & J. L. COLLINS. 1920a. — Interspecific hybrids in *Crepis*. Univ. Calif. Pub. Agr. Sci. 2; 5, 191—204, Pl. XXXVI—XXXVIII.
- BABCOCK, E. B. & J. L. COLLINS. 1920b. — Interspecific hybrids in *Crepis*. — I. *Crepis capillaris* (L.) WALLR. \times *C. Tectorum* L. Proc. Nat. Acad. Sci. 6; 670—4.
- BABCOCK, E. B. & M. H. HALL. 1924. — *Hemizonia Congesta*. A genetic, ecologic and taxonomic study of the hay-field tarweeds. Univ. Calif. Pub. Bot. 13; 15—100, Pl. I—VII.
- BABCOCK, E. B. & M. M. LESLEY. 1926. — Chromosome number and individuality in the genus *Crepis*. II. The chromosomes and taxonomic relationships. Univ. Calif. Pub. Agr. Sci. 2; 11, 315—41.
- BALLANTINE, A. J. 1909. — A preliminary note on the embryosac of *Protea Lepidocarpon* R. Br. Ann. Bot. 23; 161—2.
- BALLY, W. 1912. — Chromosomenzahlen bei *Triticum*- und *Aegilops*-Arten. Ein cytologischer Beitrag zum Weizenproblem. Ber. Deu. Bot. Ges. 30; 163—72.
- BALLY, W. 1919. — Die GODRON'schen Bastarde zwischen *Aegilops*- und *Triticum*-Arten. Vererbung und Zytologie. Zeitschr. Indukt. Abst. Vererb. Lehre. 20; 177—240, Pl. I—IV.
- BANNIER, J. P. 1923. — Untersuchungen über apogame Fortpflanzung bei einigen elementaren Arten von *Erophila verna*. Rec. Trav. Bot. Neerl. 20; 1—106.
- BARANOV, P. 1925 (1924). — Contributions a l'étude de l'embryologie des Orchidees. II. *Herminium Monorchis* R. Br. (with French summary). Jour. Soc. Bot. Russie 9; 1—9.
- BARANOV, P. 1926. — Cytologische und embryologische Untersuchungen an *Drimiopsis Maculata* LINDL. Zeitschr. Zellforsch. Mikros. Anat. 3; 131—48.
- BARANOV, P. et V. PODDUBNAJA. 1925. — Sur l'embryologie des Amaryllidacées du Turkestan: *Ungernia Severzovii* B. FEDTSCH. et *Ixiolirion tataricum* (PALL.) ROEM. et SCHULT. Bull. Univ. Asie. Centr. Tashkent 11; 1—15, Pl. I, II.
- BARTLETT, H. H. 1915a. — The mutations of *Oenothera stenomeres*. Amer. Jour. Bot. 2; 100—9.
- BARTLETT, H. H. 1915b. — The experimental study of genetic relationships. Amer. Jour. Bot. 2; 132—55.
- BARTLETT, H. H. 1916. — The status of the mutation theory. Amer. Nat. 50; 513—29.
- BATESON, W. & C. PELLEW. 1920. — The genetics of rogues among culinary peas. Proc. Roy. Soc. London Ser. B. 91; 186—95.

- BAUR, E. 1924. — Untersuchungen über das Wesen, die Entstehung und die Vererbung von Rassenunterschieden bei *Antirrhinum majus*. Biblioth. genet. 4; 1—170, Pl. I—V.
- BEADLE, G. W. & B. McCLINTOCK, 1928. — A genic disturbance of meiosis in *Zea mays*. Science 68; 433.
- BEAL, J. M. 1928. — A study of the heterotypic prophase in the microsporogenesis of cotton. La Cellule 38; 245—68, Pl. I—II.
- BECKMAN, I. 1928. — Kreuzungsuntersuchungen an *Delphinium Orientale*. Hereditas 11; 107—128.
- BEER, R. 1906. — On the development of the pollen-grain and anther of some *Onagraceae*. Beih. Bot. Centralbl. 19, Abt. I; 286—313, Pl. III—V.
- BEER, R. 1912. — Studies in spore development. II. On the structure & Division of the nuclei in the *Compositae*. Ann. Bot. 26; 705—26, Pl. LXVI—LXVII.
- BEGHEL, F. E. 1925. — The embryogeny of *Pastinaca sativa*. Amer. Jour. Bot. 12; 327—37, Pl. XXXIV—XXXV.
- BELAJEFF, W. 1894. — Zur Kenntnis der Karyokinese bei den Pflanzen. Flora 79; 430—42, Pl. XII, XIII.
- BĚLAŘ, K. 1925. — Der Chromosomenbestand der *Melandrium*-Zwitter. Zeitschr. Indukt. Abst. Vererb. Lehre. 39; 184—90, Pl. III.
- BELLING, J. 1921. — The behavior of homologous chromosomes in a triploid *Canna*. Proc. Nat. Acad. Sci. 7; 197—201.
- BELLING, J. 1924. — The distribution of chromosomes in the pollen-grains of a triploid hyacinth. Amer. Nat. 58; 440—6.
- BELLING, J. 1925a. — Fracture of chromosomes in rye. Jour. Hered. 16; 465—6.
- BELLING, J. 1925b. — Production of triploid and tetraploid plants. Jour. Hered. 16; 463—4.
- BELLING, J. 1925c. — Chromosomes of *Canna* and of *Hemerocallis*. Jour. Hered. 16; 465—6.
- BELLING, J. 1925d. — Homologous and similar chromosomes in diploid and triploid hyacinths. Genetics 10; 59—71.
- BELLING, J. 1926. — Carn. Inst. Wash. Year Book 25; 39—42.
- BELLING, J. 1927a. — Forms of plant chromosomes. Jour. Hered. 18; 371—4.
- BELLING, J. 1927b. — The nodes at the reduction division in bivalents of *Hyacinthus*. Nature 119; 527—8.
- BELLING, J. 1927c. — The diminution in number of the nodes in the bivalents of *Lilium*. Nature 120; 549.
- BELLING, J. 1927d. — The attachments of chromosomes at the reduction division in flowering plants. Jour. Genetics 18; 178—205.
- BELLING, J. 1927e. — Configurations of bivalents of *Hyacinthus* with regard to segmental interchange. Biol. Bull. Woods Hole 52; 480—7.
- BELLING, J. 1928a. — Nodes and chiasmata in the bivalents of *Lilium* with regard to segmental interchange. Biol. Bull. Woods Hole 54; 465—70, Pl. I.
- BELLING, J. 1928b. — The contraction of pachyphase chromosomes in *Lilium*. Nature 122; 685.

- BELLING, J. 1928c. — Contraction of chromosomes during maturation divisions in *Lilium* and other plants. Univ. Calif. Publ. Bot. 14; 335—43.
- BELLING, J. & A. F. BLAKESLEE, 1926. — On the attachment of non-homologous chromosomes at the reduction division in certain 25-chromosome *Daturas*. Proc. Nat. Acad. Sci. 12; 7—11.
- BELLING, J. & A. F. BLAKESLEE. 1927. — The assortment of chromosomes in haploid *Daturas*. La Cellule 37; 353—66.
- BLACKBURN, K. 1924. — The cytological aspects of the determination of sex in the dioecious forms of *Lychnis*. Br. Jour. Exptl. Bio. I; 413—30, Pl. I, II.
- BLACKBURN, K. 1925. — Chromosomes and classification in the genus *Rosa*. Amer. Nat. 59; 200—5.
- BLACKBURN, K. 1927. — Polyploidy within a species. Nature 120; 157—8.
- BLACKBURN, K. 1928. — Chromosome number in *Silene* and the neighbouring genera. Verh. V Internat. Kongr. Vererb. Wiss. Berlin; 439—46.
- BLACKBURN, K. (1926) 1929. — On the occurrence of sex chromosomes in flowering plants with some suggestions as to their origin. Proc. Internat. Congr. Plant Sci. Ithaca 1; 299—306, Pl. I—VI.
- BLACKBURN, K. B. & J. W. H. HARRISON. 1921. — The status of the British rose forms as determined by their cytological behavior. Ann. Bot. 35; 159—89, Pl. IX—X.
- BLACKBURN, K. B. & J. W. H. HARRISON. 1922. — The meiotic phase in the *Salicaceae*. Report Br. Assoc. Adv. Sci. 398.
- BLACKBURN, K. B. & J. W. H. HARRISON. 1924. — A preliminary account of the chromosomes and chromosome behavior in the *Salicaceae*. Ann. Bot. 38; 361—78.
- BLAKESLEE, A. F. 1925. — Carn. Inst. Wash. Year Book 24; 40—4.
- BLAKESLEE, A. F. 1927. — Nubbin, a compound chromosomal type in *Datura*. Ann. N. Y. Acad. Sci. 30; 1—29, Pl. I—VIII.
- BLAKESLEE, A. F. 1928. — Genetics of *Datura*. Verh. V. Internat. Kongr. Vererb. Wiss. Berlin; 117—30.
- BLAKESLEE, A. F., J. BELLING & M. E. FARNHAM, 1923. — Inheritance in tetraploid *Daturas*. Bot. Gaz. 76; 329—73.
- BLAKESLEE, A. F. & M. E. FARNHAM. 1923. — Trisomic inheritance in the poinsettia mutant of *Datura*. Amer. Nat. 57; 481—95.
- BLAKESLEE, A. F., G. MORRISON & A. G. AVERY. 1927. — Mutations in a haploid *Datura*. Jour. Hered. 18; 193—9.
- BLEIER, H. 1926. — Neuere zytologisch-genetische Arbeiten in der Gattung *Triticum*. Fortschritte der Landwirt. I; 280—6.
- BLEIER, H. 1928a. — Karyologische Untersuchungen an Linsen-wicken-Bastarden. Genetica 11; 111—8.
- BLEIER, H. 1928b. — Zytologische Untersuchungen an seltenen Getreide- und Rübenbastarden Verh. V Internat. Kongr. Vererb. Wiss. Berlin; 447—52.
- BOEDIJN, K. 1920. — Die Chromosomen von *Oenothera Lamarckiana* mut. *simplex*. Zeitschr. Indukt. Abst. Vererb. Lehre. 24; 71—6, Pl. I.
- BOEDIJN, K. 1924a. — Die systematische Gruppierung der Arten von *Oenothera*. Zeitschr. Indukt. Abst. Vererb. Lehre. 32; 354—62.

- BOEDIJN, K. 1924*b*. — Die typische und heterotypische Kernteilung der Oenotheren. Zeitschr. Zellen. Gewebelehre 1; 265—277.
- BOEDIJN, K. 1924*c*. — Die Gigas- und Deuterogigasformen der Oenotheren. Biol. Zentralb. 44; 127—37.
- BOEDIJN, K. 1925*a*. — Mehrfache Chromosom-Verdoppelungen bei *Oenothera Lamarckiana*. Zeitschr. Bot. 18; 161—91.
- BOEDIJN, K. 1925*b*. — Der Zusammenhang zwischen den Chromosomen und Mutationen bei *Oenothera Lamarckiana*. Rec. Trav. Bot. Neer. 22; 173—259.
- BOENICKE, L. VON. 1911. — Zur Kenntnis der Prophasen der heterotypischen Teilung einiger Pollenmutterzellen. Ber. Deu. Bot. Ges. 29; 59—65, Pl. IV.
- BOLENBAUGH, A. 1928. — Microsporogenesis in *Tropaeolum majus* with special reference to the cleavage process in tetrad formation. Bull. Torr. Bot. Club 55; 105—16, Pl. VI, VII.
- BOLLESLEE, A. 1925. — The chromosomes of *Paris quadrifolia* and the mechanism of their division. Quart. Jour. Micr. Sci. 69; 1—26, Pl. I.
- BONNET, J. 1911. — Sur le groupement par paires des chromosomes dans les noyaux diploïdes. Arch. Zellforsch. 7; 231—41, Pl. XXI—XXII.
- BONNET, J. 1912. — Recherches sur l'évolution des cellules nourricières du pollen chez les angiospermes. Arch. Zellforschung 7; 604—722, Pl. XXXIX—XLV.
- BONNEVIE, K. 1908. — Chromosomenstudien Chromosomen von *Ascaris*, *Allium* und *Amphiuma*. Ein Beitrag zur Lehre der Chromosomen-Individualität. Arch. Zellforsch. 1; 450—514.
- BORGENSTAM, E. 1922. — Zur Zytologie der Gattung *Syringa* nebst Erörterungen über den Einfluss äusserer Faktoren auf die Kernteilungsvorgänge. Ark. Bot. 17; 1—27, Pl. I.
- BREMER, G. 1923. — A cytological investigation of some species and species-hybrids within the genus *Saccharum*. Genetica 5; 97—148, 274—376.
- BREMER, G. 1924. — The cytology of the sugarcane. Pt. II. Genetica 6; 498—525.
- BREMER, G. 1925. — The cytology of the sugarcane. Third contribution. Genetica 7; 293—322.
- BREMER, G. 1928*a*. — Cytology of sugarcane hybrids. Archief voor de Suikerindustrie in Nederlandsch Indie. Part III; 565. (From Research Items, Nature 122; 492).
- BREMER, G. 1928*b*. — Chromosomal mutations in *Saccharum*. Rec. Trav. Bot. Neer. 25*A*; 82—91.
- BREMER, G. 1928*c*. — De cytologie van het Suikerriet. Een cytologisch onderzoek der bastaarden tusschen *Saccharum officinarum* en *Saccharum spontaneum*. Archief voor de Suikerindustrie in Nederl. Indie 363; 565—697, Pl. I—VII.
- BREMER, G. 1928*d*. — Het cytologisch onderzoek der bastaarden tusschen *Saccharum officinarum* en *Saccharum spontaneum*. Nederlandsch Kruidkundig Archief, Afl. 2; 130—2.

- BRENNER, W. 1922. — Zur Kenntnis der Blütenentwicklung einiger Junceen. Acta. Soc. Sci. Fenn. 50; 4, 1—37, Pl. I.
- BRESLAWETZ, L. 1926. — Polyploide Mitosen bei *Cannabis sativa* L. Ber. Deu. Bot. Ges. 44; 498—502.
- BRETZLER, E. 1924. — Beiträge zur Kenntnis der Gattung *Platanus*. Bot. Arch. 7; 5—6, 388—417.
- BRIEGER, F. 1927. — Über Artkreuzungen in der Gattung *Nicotiana*. Zeitschr. Indukt. Abst. Vererb. Lehre 46; 22.
- BRIEGER, F. 1928a. — Über Artkreuzungen in der Gattung *Nicotiana*. Verh. V Internat. Congr. Vererb. Wiss. Berlin; 485—95.
- BRIEGER, F. 1928b. — Über die Vermehrung der Chromosomenzahl bei dem Bastard *Nicotiana Tabacum* L. \times *N. Rusbyi* BRITT. Zeitschr. Indukt. Abst. Vererb. Lehre 47; 1—53.
- BROUWER, J. 1924. — Studies in the *Platanaceae*. Rec. Trav. Bot. Neer. 21; 369—82, 4 Pl.
- BROWN, W. H. 1908. — The nature of the embryosac of *Peperomia*. Bot. Gaz. 46; 445—460, Pl. XXXI—XXXIII.
- BUXTON, B. H. & W. C. F. NEWTON. 1928. — Hybrids of *Digitalis ambigua* and *Digitalis purpurea*, their fertility and cytology. Jour. Genetics 19; 269—79, Pl. XIX, XX.
- CAMPBELL, D. H. 1897. — A morphological study of *Naias* and *Zannichellia*. Proc. Calif. Acad. Sci. Ser. III, Bot. I; 1—70, Pl. I—V.
- CAMPBELL, D. H. 1905. — Studies on the *Araceae*. III. Ann. Bot. 19; 329—49.
- CAMPIN, M. G. 1924. — An irregular method of pollen formation in *Solandra grandiflora* Sw. New Phytol. 23; 282—7.
- CANNON, W. A. 1903a. — Studies in plant hybrids. The spermatogenesis of hybrid cotton. Bull. Torr. Bot. Club 30; 133—72, Pl. VII, VIII.
- CANNON, W. A. 1903b. — Studies in plant hybrids. The spermatogenesis of hybrid peas. Bull. Torr. Bot. Club 30; 519—43, Pl. XVII—XIX.
- CARANO, E. 1915. — Sull'embriologia di „*Poinsettia pulcherrima*” R. GRAH. Ann. di Bot. 13; 343—55, Pl. XVII.
- CARANO, E. 1919. — Nuovo contributo alla embriologia delle *Asteraceae*. R. Accad. Dei Lincei Atti. Ser. V Sci. Fis. Mat. Nat. 28; 412—4.
- CARANO, E. 1921. — Nuove ricerche sulla embriologia delle *Asteraceae*. Ann. di Bot. 15; 97—196, Pl. IV—XII.
- CARANO, E. 1924. — Osservazioni sul meccanismo di divisione della cellula madre del sacco embrionale nelle piante apogame. R. Accad. Dei Lincei Atti. Ser. V Sci. Fis. Math. Nat. 33; Ser. V 150—5.
- CARDIFF, I. D. 1906. — A study of synapsis and reduction. Bull. Torr. Bot. Club 33; 271—306, Pl. XII—XV.
- CARRUTHERS, D. 1921. — The somatic mitosis in *Hyacinthus orientalis* var. *albulus*. Arch. Zellforsch. 15; 370—6, Pl. XX.
- CARTER, K. M. 1928. — A contribution to the cytology of the ovule of *Orobanche minor*. Jour. Roy. Micr. Soc. London, 48; Ser. III 389—403, Pl. I—VI.

- CASTETTER, E. F. 1923. — Studies on the cytology of *Melilotus alba*. Iowa, Acad. Sci. Proc. 30; 331.
- CASTETTER, E. F. 1925. — Studies on the comparative cytology of the annual and biennial varieties of *Melilotus alba*. Amer. Jour. Bot. 12; 270—86, Pl. XV—XVII.
- CASTETTER, E. F. 1926. — Cytological studies in the *Cucurbitaceae*. I. Microsporogenesis in *Cucurbita maxima*. Amer. Jour. Bot. 13; 1—10, Pl. I, II.
- CHAMBERLAIN, C. J. 1897. — Contributions to the life history of *Lilium philadelphicum*. III. The pollen-grain. Bot. Gaz. 23; 423—30, Pl. XXXV—XXXVI.
- CHATTAWAY, M. N. 1926. — Note on the chromosomes of the genus *Hypericum* with special reference to chromosome size in *H. Calycinum*. Br. Jour. Exp. Biol. 3; 141—3.
- CHEESMAN, E. E. 1927. — Fertilization and embryogeny in *Theobroma Cacao* L. Ann. Bot. 41; 107—37.
- CHIARUGI, A. 1924. — Embriologia delle *Cistaceae*. R. Accad. Dei Lincei Atti. Ser. 5 Sci. Math. Nat. 33; 1, 103—5.
- CHIARUGI, A. 1925. — Embriologia delle *Cistaceae*. Nuov. Giorn. Bot. Ital. N. S. 32; 223—314, Pl. VI—XIV.
- CHIARUGI, A. 1926a. — Fenomeni di aposporia e di apogamia in *Artemisia nitida* BERTOL. R. Accad. Del Lincei Atti. Ser. VI. 3; 281—4.
- CHIARUGI, A. 1926b. — Aposporia e apogamia in *Artemisia nitida* BERTOL. Nuov. Giorn. Bot. Ital. N. S. 33; 501—626, Pl. IV—IX.
- CHIARUGI, A. 1927a. — Ricerche sulla embriologia delle *Asteraceae*. Nuov. Giorn. Bot. Ital. N. S. 34; 717—77, Pl. VII—IX.
- CHIARUGI, A. 1927b. — L'evoluzione delle cellule del tapeto e la formazione del periplasmodio in alcune *Asteraceae*. Nuov. Giorn. Bot. Ital. N. S. 34; 783—828, Pl. X—XII.
- CHIARUGI, A. 1927c. — Poliploidia nel genere „*Knautia*” (*Dipsacaceae*). Nuov. Giorn. Bot. Ital. N. S. 34; 864—71.
- CHIARUGI, A. 1928. — Ricerche sui generi „*Ionopsidium*” RCHB. e „*Bivonaea*” DC. con speciale riguardo agli endemismi di Toscana e di Spagna. Nuov. Giorn. Bot. Ital. N. S. 34; 1452—1496.
- CHIPMAN, R. H. 1925. — A study of synizesis and synapsis in *Lilium Superbum* L. Amer. Jour. Bot. 12; 1—18, Pl. I—IV.
- CHIPMAN, R. H. & T. H. GOODSPEED. 1927. — Inheritance in *Nicotiana Tabacum*. VIII. Cytological features of *purpurea* haploid. Univ. Calif. Pub. Bot. 11; 8, 141—58, Pl. IV—VI.
- CHITTENDEN, R. J. 1928. — Notes on species crosses in *Primula*, *Godetia*, *Nemophila* and *Phacelia*. Jour. Genet. 19; 285—314, Pl. XXI.
- CHODAT, R. 1924. — La caryocinèse et la réduction chromatique observées sur le vivant. C. R. Soc. Phys. et Hist. Nat. Genève 41; 96—99.
- CHODAT, R. 1925a. — Sur la réalité de la chiasmotypie dans la cinèse de maturation de l'*Allium ursinum*. C. R. Soc. Phys. et Hist. Nat. Genève 42; 4—8.
- CHODAT, R. 1925b. — La chiasmotypie et la cinèse de maturation dans l'*Allium ursinum*. Bull. Soc. Botan. Genève; 1—30.

- CHOMISURY, N. 1927. — Beitrag zur Keimfähigkeit und Zytologie des Pollens einiger *Prunus*- und *Rubus*-sorten. *Angew. Bot.* 9; 626—36.
- CHRISTOFF, M. 1925. — Cytologische Studien über die Gattung *Nicotiana*, (with German Summary). *Annuaire. Univ. Sofia Fac. Agron.* 3; 37—86, Pl. I.
- CHRISTOFF, M. 1928. — Cytological studies in the genus *Nicotiana*. *Genetics* 13; 233—77, Pl. I—IV.
- CLAUSEN, J. 1921. — Studies on the collective species *Viola tricolor* L. *Bot. Tids.* 37; 205—21 (Copenhagen) Pl. I—III.
- CLAUSEN, J. 1922. — Studies on the collective species *Viola tricolor* L. II. *Bot. Tids.* 37; 363—416. (Copenhagen).
- CLAUSEN, J. 1924. — Increase of chromosome-numbers in *Viola* experimentally induced by crossing. *Hereditas* 5; 19—22.
- CLAUSEN, J. 1926. — Genetical and cytological investigations on *Viola tricolor* L. and *V. arvensis* MURR. *Hereditas* 8; 1—156, Pl. I, II.
- CLAUSEN, J. 1927a. — Non-Mendelian inheritance in *Viola*. *Hereditas* 9; 245—56.
- CLAUSEN, J. 1927b. — Chromosome-number and the relationship of species in the genus *Viola*. *Ann. Bot.* 41; 677—714.
- CLAUSEN, R. E. 1928a. — Interspecific hybridization in *Nicotiana*. VII. The cytology of hybrids of the synthetic species, *Digluta*, with its parents, *Glutinosa* and *Tabacum*. *Univ. Calif. Pub. Bot.* 11; 10, 177—211.
- CLAUSEN, R. E. 1928b. — Interspecific hybridization and the origin of species in *Nicotiana*. *Verh. V Internat. Kongr. Vererb. Wiss. Berlin*; 547—53.
- CLAUSEN, R. E. & T. H. GOODSPEED, 1924. — Inheritance in *Nicotiana Tabacum*. IV. The trisomic character enlarged. *Genetics* 9; 181—97.
- CLAUSEN, R. E. & T. H. GOODSPEED, 1925. — Interspecific hybridization in *Nicotiana*. II. A tetraploid *Glutinosa-Tabacum* hybrid, an experimental verification of WINGE's hypothesis. *Genetics* 10; 278—84.
- CLAUSEN, R. E. & T. H. GOODSPEED, 1926a. — Inheritance in *Nicotiana Tabacum*. VII. The monosomic character fluted. *Univ. Calif. Pub. Bot.* 11; 3, 61—82, Pl. I—III.
- CLAUSEN, R. E. & T. H. GOODSPEED, 1926b. — Interspecific hybridization in *Nicotiana*. III. The monosomic *Tabacum* derivative „corrugated” from the *Sylvestris-Tabacum* hybrid. *Univ. Calif. Pub. Bot.* 11; 4, 83—101.
- CLAUSEN, R. E. & M. C. MANN, 1924. — Inheritance in *Nicotiana Tabacum*. V. The occurrence of haploid plants in interspecific progenies. *Proc. Nat. Acad. Sci.* 10; 121—7.
- CLELAND, R. E. 1922. — The reduction divisions in the pollen mother cells of *Oenothera franciscana*. *Amer. Jour. Bot.* 9; 391—413, Pl. XXV—XXVII.
- CLELAND, R. E. 1923. — Chromosome arrangements during meiosis in certain *Oenotheras*. *Amer. Nat.* 57; 562—6.
- CLELAND, R. E. 1924. — Meiosis in the pollen mother cells of *Oenothera Franciscana sulfurea*. *Bot. Gaz.* 77; 149—70, Pl. XIV, XV.
- CLELAND, R. E. 1925. — Chromosome behavior during meiosis in the pollen mother cells of certain *Oenotheras*. *Amer. Nat.* 59; 475—9.

- CLELAND, R. E. 1926a. — Meiosis in the pollen mother cells of *Oenothera Biennis* and *Oenothera Biennis sulcjurea*. Genetics 11; 127—62. Pl. I, II.
- CLELAND, R. E., 1926b. — Cytological study of meiosis in anthers of *Oenothera muricata*. Bot. Gaz. 82; 55—70, Pl. III—IV.
- CLELAND, R. E. 1928. — The genetics of *Oenothera* in relation to chromosome behavior, with special reference to certain hybrids. Verh. V Internat. Kongr. Vererb. wiss. Berlin; 554—67.
- CLELAND, R. E. (1926) 1929. — Meiosis in the pollen mother cells of the *Oenotheras* and its probable bearing upon certain genetical problems. Proc. Internat. Congr. Plant Sci, Ithaca I; 317—31.
- COHEN STUART, C. P. 1916. — Sur le développement des cellules génératrices de *Camellia theijera* (GRIFF) DYER; Ann. Jard. bot de Buitenzorg. 2 Ser. 30; 1—22, Pl. I—III.
- COMES, O. 1899. — Monographie du genre *Nicotiana* comprenant le classement botanique de tabacs industriels. Att. del. R. Instituto d'Incoraggiamento di Napoli, Ser. V, I.
- COLLINS, J. L. & M. C. MANN 1923. — Interspecific hybrids in *Crepis*. II. A preliminary report on the results of hybridizing *Crepis setosa* HALL. with *C. capillaris* (L.) WALLR. and with *C. biennis* L. Genetics 8; 212—32.
- CONDIT, I. J. 1928. — Cytological and morphological studies in the genus *Ficus*. 1. Chromosome-numbers and morphology in seven species. Univ. Calif. Pub. Bot. 11; 12, 233—44, Pl. VII.
- CORNER, E. J. H. 1927. — A cytological investigation of a sport in a plant of the garden stock. Proc. Linn. Soc. London 139; 75—7.
- COSENS, A. 1912. — A contribution to the morphology and biology of insect galls. Trans. Cand. Inst. 9; 297—381, Pl. I—XIII.
- COULTER, J. M. & J. CHAMBERLAIN 1903. — Morphology of the Angiosperms. (Morphology of Spermatophytes, Pt. II). Univ. Chicago Press.
- CRANE, M. B. 1927. — Studies in relation to sterility in plums, cherries, apples and raspberries. Mem. Hort. Soc. N. Y. 3; 119—34.
- CRANE, M. B. & C. D. DARLINGTON, 1927. — The origin of new forms in *Rubus* I. Genetica 9; 241—78.
- CRANE, M. B. & A. E. GAIRDNER. — Species-crosses in *Cochlearia* with a preliminary account of their cytology. Jour. Genetics 13; 187—200, Pl. VI—VIII.
- DAHLGREN, K. V. O. 1915. — Über die Embryologie von *Acicarpia tribuloides* Juss. Svensk. Bot. Tids. 9; 184.
- DAHLGREN, K. V. O. 1916. — Zytologische und embryologische Studien über die Reihen *Primulales* und *Plumbaginales*. K. Sv. Vet. Handl. 56; 4, 1—80, Pl. I, II.
- DAHLGREN, K. V. O. 1920. — Zur Embryologie der Kompositen mit besonderer Berücksichtigung der Endospermibildung. Zeitschr. Bot. 12; 481—516.
- DARLING, C. A. 1909. — Sex in dioecious plants. Bull. Torr. Bot. Club 36; 177—99, Pl. XII—XIV.
- DARLING, C. A., 1912. — Mitosis in living cells. Bull. Torr. Bot. Club 39; 407—9.

- DARLINGTON, C. D. 1926a. — Chromosomes of hyacinth. *Nature* 117; 670.
- DARLINGTON, C. D. 1926b. — Chromosome studies in the *Scilleae*. *Jour. Genetics* 16; 237—51, Pl. XV—XVIII.
- DARLINGTON, C. D. 1927a. — Reversion in black currants: A study of the chromosome complement. *Journ. Pomol. Hort Sci.* 6; 242.
- DARLINGTON, C. D. 1927b. — The behaviour of polyploids. *Nature* 119; 390—1.
- DARLINGTON, C. D. 1928. — Studies in *Prunus*, I and II. *Jour. Genetics* 19; 213—56, Pl. XI—XVIII.
- DASTUR, R. H. 1921. — Notes on the development of the ovule, embryosac and embryo of *Hydnora africana* THUN. *Trans. Roy. Soc. South Africa* 10; 27—31.
- DAVENPORT, C. B. 1923. — Interchromosomal mutation. *Carn. Inst. Wash. Year Book* 22; 87—96.
- DAVENPORT, C. B. 1924. — *Carn. Inst. Wash. Year Book* 23; 24—27.
- DAVENPORT, C. B. 1925. — *Carn. Inst. Wash. Year Book* 24; 22—26.
- DAVENPORT, C. B. 1926. — *Carn. Inst. Wash. Year Book* 25; 40—6.
- DAVENPORT, C. B. 1927. — *Carn. Inst. Year Book* 26; 36—42.
- DAVIS, B. M. 1909. — Cytological studies on *Oenothera*. I. Pollen-development of *Oenothera grandiflora*. *Ann. Bot.* 23; 551—71, Pl. XLI—XLII.
- DAVIS, B. M. 1910. — Cytological studies of *Oenothera*. II. The reduction divisions of *Oenothera biennis*. *Ann. Bot.* 24; 631—51, Pl. LII—LIII.
- DAVIS, B. M. 1911. — Cytological studies on *Oenothera*. III. A comparison of the reduction divisions of *Oenothera Lamarckiana* and *O. gigas*. *Ann. Bot.* 25; 941—74, Pl. LXXI—LXXIII.
- DELAUNAY, L. N. 1915. — Étude comparée caryologique de quelques espèces du genre *Muscari* MILL. *Memoirs. Soc. Natur. Kiew.* 25; 33—62.
- DELAUNAY, L. N. 1922—3. — Vergleichende Untersuchungen einiger *Muscari* MILL.- und *Bellevalia* LAPEYR.-Arten. *Moniteur Jard. Bot. Tiflis N. S. I*; 24—55.
- DELAUNAY, L. N. 1926a. — Die Veränderungen des Zellkerns in der Erblichen Variabilität. *Jour. Agr. Bot. Kharkiv* 1; 1, 43—74, Pl. I.
- DELAUNAY, L. N. 1926b. — Phylogenetische Chromosomen-Kürzung. *Zeitschr. Zellforsch. Mikr. Anat.* 4; 338—64.
- DELAUNAY, L. N. 1926c. — Chromosomentheorie der Vererbung und die Chromosomen bei einigen Liliaceen. (With German summary). *Moniteur Jard. Bot. Tiflis* 2; 1—32.
- DENHAM, H. J. 1924. — The cytology of the cotton plant. I. II. Chromosome-numbers of old and new world cottons. *Ann. Bot.* 38; 407—38, Pl. XI—XIV.
- DENNISTON, R. H. 1913. — The individuality of chromosomes in the somatic cells of *Gentiana procera*. *Science N. S.* 37; 383—4.
- DIGBY, L. 1910. — The somatic, premeiotic and meiotic nuclear divisions of *Galtonia candicans*. *Ann. Bot.* 24; 727—57, Pl. LIX—LXIII.
- DIGBY, L. 1912. — The cytology of *Primula Kewensis* and of other related *Primula* hybrids. *Ann. Bot.* 26; 357—388, Pl. XLI—XLIII.

- DIGBY, L. 1914. — A critical study of *Crepis virens*. Arch. Zellforsch. 12; 97—146, Pl. VIII—X.
- DIXON, H. H. 1895. — The nuclei of *Lilium longiflorum*. Ann. Bot. 9; 663—5.
- DOMBROWSKAJA, L. 1924. — Sur la division végétative du noyau dans les cellules de la racine de quelques races de pois. (With French summary). Jour. Soc. Bot. Russie 9; 147—152.
- DOMBROWSKY-SLUDSKY, L. 1927. — La cynèse somatique de *Cicer arietinum* L. (With French summary). Jour. Soc. Bot. Russie 12; 163—72, Pl. I.
- DORSEY, E. 1925. — Cytological studies of the maturation divisions in cereal hybrids. Abst. of Thesis, Cornell Univ. p. 1.
- DORSEY, M. J. 1919. — A study of sterility in the plum. Genetics 4; 417—88, Pl. I—V.
- DUDGEON, W. 1918. — Morphology of *Rumex crispus*. Bot. Gaz. 66; 393—420, Pl. XVII—XIX.
- DUDGEON, W. 1922. — Section of Botany, Proceedings of the Ninth Indian Science Congress. Jour. Proc. Asiat. Soc. Bengal N. S. 18; 95—124.
- DUDOK VAN HEEL, J. P. 1925. — Onderzoekingen over de ontwikkeling van de anthere van den zaadknop en van het zaad bij *Beta vulgaris* L. Diss. Delft 1—67, Pl. I—IV. 1926 — Resume — Rev. Bot. App. 6; 704—6.
- DUGGAR, B. M. 1899. — On the development of the pollen-grain and the embryo-sac in *Bignonia venusta*. Bull. Torr. Bot. Club 26; 89—105, 26, Pl. CCCLII—CCCLIV.
- DUGGAR, B. M. 1900. — Studies in the development of the pollen grain in *Symplocarpus foetidus* and *Paltandra undulata*. Bot. Gaz. 29; 81—98, Pl. I, II.
- DULFER, H. 1926. — Die Erblchkeitserscheinungen der *Oenothera Lamarckiana semigigas*. Rec. Trav. Bot. Neer. 23; 1—72.
- DYKES, W. R. 1913. — The genus *Iris*. Index Kewensis; 1—245, Pl. XLVIII.
- EAST, E. M. 1915. — The chromosome view of heredity and its meaning to plant breeders. Amer. Nat. 49; 457—94.
- EAST, E. M. 1921. — A study of partial sterility in certain hybrids. Genetics 6; 311—65.
- EAST, E. M. 1928a. — The genetics of the genus *Nicotiana*. Bibliog. Genetica 4; 243—320.
- EAST, E. M. 1928b. — Heredity in the genus *Fragaria* with special reference to the false hybrids of MILLARDET. Verh. V. Internat. Kongr. Vererb. wiss. Berlin; 625—30.
- EGHIS, S. A. 1927. — Experiments on interspecific hybridization in the genus *Nicotiana*. Bull. Appl. Bot. Plant Breed. 17; 151—89.
- EKSTRAND, H. 1918. — Zur Zytologie und Embryologie der Gattung *Plantago*. Svensk. Bot. Tids. 12; 202—6.
- ELDERS, A. T. 1927. — The cytology of certain hybrid wheats, Marquillo and H-44-24. Scient. Agr. 8; 105—111, Pl. I, II.
- ELKINS, M. G. 1914. — The maturation phases in *Smilax herbacea*. Bot. Gaz. 57; 35—52, Pl. IV—VI.
- ELST, P. v. D. 1909. — Bijdrage tot de kennis van de zaadknopontwikkeling der Saxifragaceen. Diss. Utrecht 1—59.

- EMERSON, S. H. 1924. — The absence of chromosome pairing during meiosis in *Oenothera biennis*. Papers Mich. Acad. Sci. Arts Letters 4; 111—4, Pl. XII—XIII.
- EMERSON, S. H. 1928. — Chromosome configuration in a dwarf segregate from *Oenothera Franciscana sufurea*. Papers Mich. Acad. Sci. Arts Letters 9; 117—120, Pl. XXXIV.
- EMME, H.; 1924. — Die Resultate der cytologischen Untersuchungen einiger *Aegilops*-Arten. (With German summary). Jour. Soc. Bot. Russ. 8; 193—7.
- EMME, H. 1925. — Beiträge zur Cytologie der Gersten. I. Karyotypen der Gersten. Zeitschr. Indukt. Abst. Vererb. Lehre 37; 229—36.
- EMME, H. 1927. — Zur Zytologie der Gattung *Secale* L. Bull. Appl. Bot. Plant Breed. 17; 73—100, Pl. I, II.
- EMME, H. 1928. — Karyologie der Gattung *Secale* L. Zeitschr. Indukt. Abst. Vererb. Lehre 47; 99—124.
- EMME, H. & H. SCHEPELJEVA. 1927. — Versuch einer karyologischen Artanalyse von *L. usitatissimum* L. Bull. Appl. Bot. Plant-Breed. 17; 265—72.
- ENGLER, A. & E. GILG. 1919. — Syllabus der Pflanzen-Familien. Gebrüder Borntraeger, Berlin, Edition VIII, 1—395.
- ENGLER, A. & K. PRANTL. 1889—1900. — Die Natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten.
- ERLANDON, E. W. & F. J. HERMANN. 1927. — The morphology and cytology of perfect flowers in *Populus tremuloides* MICH. Papers Mich. Acad. Sci. 8; 97—110, Pl. IV—VI.
- ERNST, A. 1901. — Beiträge zur Kenntnis der Entwicklung des Embryosackes und des Embryos (Polyembryonie) von *Tulipa Gesneriana* L. Flora 88; 37—77, Pl. IV—VIII.
- ERNST, A. 1902. — Chromosomen reduction, Entwicklung des Embryosackes und Befruchtung bei *Paris quadrifolia* L. und *Trillium grandiflorum* SALISB. Flora 91; 1—46, Pl. I—VI.
- ERNST, A. 1914. — Embryobildung bei *Balanophora*. Flora 106; 129—59, Pl. I, II.
- ERNST, A. & C. Bernard. 1912. — Beiträge zur Kenntnis der Saprophyten Javas. XII. Entwicklungsgeschichte des Embryosackes, des Embryos und des Endosperms von *Burmannia coelestis* DON. Ann. Jard. Bot. Buitenzorg. Ser. II, 26; 234—53, Pl. XIX—XXII.
- ERNST, A. & F. MOSER. 1925. — Entstehung, Erscheinungsform und Fortpflanzung des Artbastardes *Primula pubescens* JACQ. (*Primula auricula* L. × *Pr. hirsuta* ALL.). Archiv. Julius Klaus-stift. Vererbungsforsch. Zurich 1; 273—453, Pl. X—XIV.
- ERNST, A. & E. SCHMID. 1913. — Über Blüte und Frucht von *Rafflesia*. Morphologisch-biologische Beobachtungen und entwicklungsgeschichtlich zytologische Untersuchungen. Ann. Jard. Bot. Buitenzorg 27; 1—58, Pl. I—VIII.
- EVANS, G. 1926. — Chromosome complements in grasses. Nature 118; 841.
- FABER, F. C. von 1912. — Morphologisch-physiologische Untersuchungen an

- Blüten von *Coffea*-Arten. Ann. Jard. Bot. Buitenzorg 25; 59—160, Pl. I—XII.
- FARMER, J. B. 1893. — On nuclear division in the pollen-mother-cells of *Lilium martagon*. Ann. Bot. 7; 392—6.
- FARMER, J. B. 1895a. — On the division of the chromosomes in the first mitosis of the pollen-mother-cells of *Lilium*. Jour. Roy. Microscop. Soc.; 501—4.
- FARMER, J. B. 1895b. — Über Kernteilung in *Lilium*-Antheren besonders in Bezug auf die Centrosomenfrage. Flora 80; 56—67, Pl. II, III.
- FARMER, J. B. & J. E. S. MOORE. 1896. — On the essential similarities existing between the heterotype nuclear divisions in animals and plants. Anat. Anzeiger 11; 71—80.
- FARMER, J. B. & D. SHOVE. 1905. — On the structure and development of the somatic and heterotypic chromosomes of *Tradescantia virginica*. Quart. Jour. Microscop. Sci. 48; 559—70, Pl. XLII, XLIII.
- FARR, C. H. 1918. — Cell division by furrowing in *Magnolia*. Amer. Jour. Bot. 5; 379—95, Pl. XXX—XXXII.
- FARR, C. H., 1922. — The meiotic cytokinesis of *Nelumbo*. Amer. Jour. Bot. 9; 296—306, Pl. XV.
- FAWORSKI, N. 1927. — Vergleichende karyologische Untersuchung einiger Arten von *Lolium*. Planta 3; 282—91.
- FERGUSON, M. C. 1928. — A cytological and a genetical study of *Petunia*. Bull. Torr. Bot. Club 54; 657—64, Pl. XXXV, XXXVI.
- FERGUSON, N. 1926. — The *Aloineae*: A cytological study, with especial reference to the form and size of the chromosomes. Roy. Soc. London Phil. Trans. B., 215; 225—253, Pl. XVIII, XIX.
- FERRAND, M. 1923. — Note sur la caryocinèse de *Secale cereale* et sur une cause d'erreur dans la numération de ses chromosomes. Bull. Roy. Soc. Bot. Belg. 55; 186—9.
- FINK, B. 1899. — Contributions to the life history of *Rumex*. Minn. Bot. Studies 2; Bot. Ser. 4, 137—53, Pl. IX—XII.
- FINN, W. W., 1928. — Spormazellen bei *Vinca minor* und *V. herbacea*. Ber. Deu. Bot. Ges. 46; 235—46, Pl. V.
- FISK, E. L. 1925. — The chromosomes of *Zea Mays*. Proc. Nat. Acad. Sci. 2; 352—6.
- FISK, E. L. 1927. — The chromosomes of *Zea Mays*. Amer. Jour. Bot. 14; 53—75, Pl. X—XII.
- FLACH, P. 1924. — Cytologische Untersuchungen über die Gefäßbildung bei *Cucurbita Pepo*. Sitz. Ber. Akad. Wiss. Wien. Math. Nat. Abt. I, 133; 265—90, Pl. I.
- FLAKSBERGER, C. A. 1926. — A contribution to the study of wild monocoecum and dicoecum and their phylogenetic connection with one another and with cultivated varieties. Bull. Appl. Bot. Plant Breed. 16; 201—34, Pl. I—VII.
- FLAKSBERGER, C. A. 1926. — Liguleless durum wheats of Cyprus. Bull. Appl. Bot. Plant Breed. 16; 123—50.

- FLORIN, R. 1927. — Pollen production and incompatibilities in apples and pears. Mem. Hort. Soc. N. Y. 3; 87—118, Pl. V—VII.
- FOLSON, D. 1916. — Studies in the morphology of *Yucca glauca*. Minn. Bot. Studies IV, 4; 427—35, Pl. XIII—XVI.
- FRANCK, W. J. 1911. — Somatische kern- en cellen microsporogenese bij het suikkerriet. Diss. Delft; 1—184, Pl. I—VIII.
- FRIEMANN, W. 1910. — Über die Entwicklung der generativen Zelle im Pollenkorn der monokotylen Pflanzen. Diss. Bonn; 1—44.
- FRISENDAHL, A. 1912. — Cytologische und entwicklungs-geschichtliche Studien an *Myricaria germanica* DESV. Kl. Svensk. Vet. Akad. Hand. N. Ser. 48; 7, 1—62, Pl. I—III.
- FRISENDAHL, A. 1927. — Über die Entwicklung chasmo- und kleistogamer Blüten bei der Gattung *Elatine*. Meddelanden Fran Goteborgs Bot. tradg. 3; 99—142.
- FROST, H. B. 1927. — Chromosome mutant types in stocks (*Matthiola incana* L. B.) I. Characters due to extra chromosomes. Jour. Hered. 18; 475—86.
- FROST, H. B. & M. C. MANN. 1924. — Mutant forms of *Matthiola* resulting from non-disjunction. Amer. Nat. 58—569; 72.
- FRYE, T. C. 1901. — Development of the pollen in some *Asclepiadaceae*. Bot. Gaz. 32; 325—31, Pl. XIII.
- FRYE, T. C. 1902. — A morphological study of certain *Asclepiadaceae*. Bot. Gaz. 34; 389—413, Pl. XIII—XV.
- FUCHS, A. & H. ZIEGENSPECK. 1924. — Aus der Monographie der *Orchis Traunsteineri* SAUT. IV. Chromosomen einiger Orchideen. Bot. Arch. 5; 457—70.
- FUKUDA, Y. 1927. — Cytological studies on the development of the pollen-grain in different races of *Solanum tuberosum* L. with special reference to sterility. Bot. Mag. Tokyo 487; 459—76.
- GAGER, S. & A. F. BLAKESLEE. 1927. — Chromosome and gene mutations in *Datura* following exposure to radium rays. Proc. Nat. Acad. Sci. 13; 75—9.
- GAINES, E. F. & H. C. AASE. 1926. — A haploid wheat plant. Amer. Jour. Bot. 13; 373—85.
- GAIRDNER, A. E. 1926. — *Campanula persicifolia* and its tetraploid form „Telham Beauty”. Jour. Genetics 16; 341—51, Pl. XXV—XXVII.
- GAISER, L. O. 1926. — A list of chromosome numbers in angiosperms. Genetica 8; 401—84.
- GAISER, L. O. 1927. — Chromosome numbers and species characters in *Anthurium*. Transact. Roy. Soc. Can. Ser. 111, 21; Sect. V; 1—137, Pl. I—XI.
- GALLAGHER, W. J. 1908. — The cytology of *Rhoeo discolor*. Ann. Bot. 22; 117.
- GALLÁSTEGUI, C. 1926. — Número de cromosomas en algunas especies del género *Brassica*. Bol. R. Soc. Esp. Hist. Nat. Madrid 26; 185—91.
- GATES, R. R. 1907a. — Pollen development in hybrids of *O. lata* × *O. Lamarckiana* and its relation to mutation. Bot. Gaz. 43; 81—115, Pl. II—IV.
- GATES, R. R. 1907b. — Hybridization and germ cells of *Oenothera* mutants. Bot. Gaz. 44; 1—21.

- GATES, R. R. 1908a. — The chromosomes of *Oenothera*. Science N. S. 27; 193—95.
- GATES, R. R. 1908b. — Further studies on the chromosomes of *Oenothera*. Science, N. S. 27; 335.
- GATES, R. R. 1908c. — A study of reduction in *Oenothera rubrinervis*. Bot. Gaz. 46; 1—34, Pl. I—III.
- GATES, R. R. 1909a. — Further studies of *Oenothera* cytology. Science, N. S. 29; 269.
- GATES, R. R. 1909b. — The behavior of the chromosomes in *Oe. lata* and *Oe. gigas*. Bot. Gaz. 48; 179—200, Pl. XII—XIV.
- GATES, R. R. 1909c. — The stature and chromosomes of *Oenothera gigas* DE VRIES. Archiv. Zellforsch. 3; 525—52, Pl. XXIX, XXX.
- GATES, R. R. 1911. — Pollen formation in *Oenothera gigas*. Ann. Bot. 25; 909—40, Pl. LXVII—LXX.
- GATES, R. R. 1912. — Somatic mitoses in *Oenothera*. Ann. Bot. 26; 993—1010, Pl. LXXXVI.
- GATES, R. R. 1913a. — A contribution to a knowledge of the mutating *Oenotheras*. Trans. Linn. Soc. 2 Ser. 8; 1, 1—67, Pl. I—VI.
- GATES, R. R. 1913b. — Tetraploid mutants and chromosome mechanisms. Biol. Zentralbl. 33; 92—9.
- GATES, R. R. 1915a. — The mutation factor in evolution with particular reference to *Oenothera*. London, 1—353.
- GATES, R. R. 1915b. — Heredity and mutations as cell phenomena. Amer. Jour. Bot. 2; 519—28.
- GATES, R. R. 1920. — A preliminary account of the meiotic phenomena in the pollen-mother-cells and tapetum of lettuce (*Lactuca sativa*). Proc. Roy. Soc. London Ser. B. 91; 216—23.
- GATES, R. R. & J. LATTER. 1927. — Observations on the pollen development of two species of *Lathraea*. Jour. Roy. Micr. Soc. Ser. 3, 47; 209—25, Pl. I—VI.
- GATES, R. R. & E. M. REES. 1921. — A cytological study of pollen development in *Lactuca*. Ann. Bot. 35; 365—98, Pl. XVI—XIX.
- GATES, R. R. & N. THOMAS. 1914. — A cytological study of *Oenothera* mut. *lata* and *Oe. mut. semilata* in relation to mutation. Quart. Jour. Microscop. Sci 44; 523—72, Pl. XXXV—XXXVII.
- GAUMANN, E. 1919. — Studien über die Entwicklungs-geschichte einiger *Saxifragales*. Rec. Trav. Bot. Neerl. 16; 285—322.
- GEERTS, J. M. 1908a. — Über die Zahl der Chromosomen von *Oenothera Lamarckiana*. Ber. Deu. Bot. Ges. 25; 191—95, Pl. VI.
- GEERTS, J. M. 1908b. — Beiträge zur Kenntnis der cytologischen Entwicklung von *Oenothera Lamarckiana*. Ber. Deu. Bot. Ges. 26a; 608—614.
- GEERTS, J. M. 1909. — Beiträge zur Kenntnis der Cytologie und der partiellen Sterilität von *Oenothera Lamarckiana*. Rec. Trav. Bot. Neerl. 5; 93—208, Pl. V—XXII.
- GEERTS, J. M. 1911. — Cytologische Untersuchungen einiger Bastarde von *Oenothera gigas*. Ber. Deu. Bot. Ges. 29; 160—66, Pl. VIII.

- GERSHOY, A. 1928. — Studies in North American violets. I. General considerations. Vermont Agr. Exp. Sta. Bull. 279; 1—18.
- GHIMPU, M. V. 1928. — Contribution à l'étude caryologique du genre *Medicago*. C. R. Acad. Sci. Paris 187; 245—7.
- GLIŠIČ, L. 1924. — Development of the female x-generation and embryo in *Ramondia*. Thesis Univ. Belgrade.
- GOLDSCHMIDT, R. 1913. — Die Merogonie der *Oenothera*-Bastarde und die Doppeltreciproken Bastarde von DE VRIES. Arch. Zellforsch. 9; 331—44.
- GOLINSKI, St. J. 1893. — Ein Beitrag zur Entwicklungsgeschichte des Androeceums und des Gynaeceums der Gräser. Bot. Centralbl. 55; 1—17, 65—72, 129—35.
- GOODSPEED, T. H. 1923. — A preliminary note on the cytology of *Nicotiana*-species and -hybrids. Svensk. Bot. Tids. 17; 472—8.
- GOODSPEED, T. H. 1924. — Some chromosome numbers in *Nicotiana*. Amer. Nat. 58; 381—2.
- GOODSPEED, T. H. & R. E. CLAUSEN. 1927a. — Interspecific hybridization in *Nicotiana*. V. Cytological features of two F₁-Hybrids made with *Nicotiana Bigelovii* as a parent. Univ. Calif. Pub. Bot. 11; 6, 117—25.
- GOODSPEED, T. H. & R. E. CLAUSEN. 1927b. — Interspecific hybridization in *Nicotiana*. VI. Cytological features of *Sylvestris-Tabacum* hybrids. Univ. Calif. Pub. Bot. 11; 7, 127—40.
- GOODSPEED, T. H. & R. E. CLAUSEN. 1928. — Interspecific hybridization in *Nicotiana*. Univ. Calif. Pub. Bot. 11; 13, 245—56, Pl. VIII, IX.
- GOODSPEED, T. H., R. E. CLAUSEN & R. H. CHIPMAN. 1926. — Interspecific hybridization in *Nicotiana*. IV. Some cytological features of the *Paniculata-Rustica* hybrid and its derivatives. Univ. Calif. Pub. Bot. 11; 5, 103—115.
- GOODSPEED, T. H. & A. R. OLSON. 1928. — The production of variation in *Nicotiana* species by X-ray treatment of sex cells. Proc. Nat. Acad. Sci. 14; 66—9.
- GOTOH, K. 1924. — Über die Chromosomenzahl von *Secale cereale* L. Bot. Mag. Tokyo 38; 135—52.
- GOULDEN, C. H. 1926. — A genetic and cytological study of dwarfing in wheat and oats. Univ. Minn. Agr. Exp. Sta. Tech. Bull. 33; 1—37, Pl. I—III.
- GOW, J. E., 1907. — Morphology of *Spathyema foetida*. Bot. Gaz. 43; 131—6.
- GOW, J. E. 1908. — Studies in *Araceae*. Bot. Gaz. 46; 35—42.
- GOW, J. E. 1913. — Observations on the morphology of the Aroids. Bot. Gaz. 56; 127—42.
- GRAF, J. 1921. — Beiträge zur Kenntnis der Gattung *Populus*. Beih. Bot. Centralbl. 38; 405—54.
- GRANIER, J. & L. BOULE. 1911. — Sur le phénomène de conjugation des chromosomes à la prophase de la première cinèse réductrice (microsporogenèse chez *Endymion nultans* DUM.). C. R. Acad. Sci. Paris 152; 393—6.
- GRAVES, A. H. 1908. — The morphology of *Ruppia maritima*. Trans. Conn. Acad. Arts Sci., New Haven 14; 59—170, Pl. I—XV.
- GRÉGOIRE, V. 1906. — La structure de l'élément chromosomique au repos et en

- division dans les cellules végétales (Racines *Allium*). La Cellule 23; 309—57, Pl. I—II.
- GRÉGOIRE, V. 1912. — Les phénomènes de la métaphase et de l'anaphase dans la caryocinèse somatique à propos d'une interprétation nouvelle. Ann. Soc. Sci. Bruxelles 36; 339—70, 1 Pl.
- GREGORY, R. P. 1909. — Notes on the histology of the giant and ordinary forms of *Primula sinensis*. Proc. Cambridge Phil. Soc. 15; 139—46, Pl. X.
- GREGORY, R. P. 1914. — On the genetics of tetraploid plants in *Primula sinensis*. Proc. Roy. Soc. London, Ser. B. 87; 484—92.
- GRIFFEE, F. 1925. — Correlated inheritance of botanical characters in barley and manner of reaction to *Helminthosporium sativum*. Jour. Agr. Res. 30; 915—33, Pl. I, II.
- GRIFFEE, F. 1927. — Chromosome number in species of *Hordeum*. Univ. Minn. Biol. Sci. 6; 319—31, Pl. XXXIV, XXXV.
- GRIMM, J. 1912. — Entwicklungsgeschichtliche Untersuchungen an *Rhus* und *Coriaria*. Flora 104; 309—34, Pl. X, XI.
- GUIGNARD, L. 1884. — Recherches sur la structure et la division du noyau cellulaire Ann. Sci. Nat. Bot. Ser. VI, 17; 5—59.
- GUIGNARD, L. 1885. — Nouvelles recherches sur le noyau cellulaire et les phénomènes de la division communs aux végétaux et aux animaux. Ann. Sci. Nat. Bot. Ser. VI, 20; 310—72, Pl. XV—XVIII.
- GUIGNARD, L. 1889. — Observations sur la structure et la division du noyau dans les cellules mères du pollen des cycadées. Bull. Soc. Bot. France 36; 206—211.
- GUIGNARD, L. 1891a. — Sur l'existence des „sphères attractives” dans les cellules végétales. C. R. Acad. Sci. Paris 112; 539—42.
- GUIGNARD, L. 1891b. — Nouvelles études sur la fécondation. Ann. Sci. Nat. Bot. Ser. VII, 14; 163—296, Pl. XI—XVIII.
- GUIGNARD, L. 1897. — Les centres cinétiques chez les végétaux. Ann. Sci. Nat. Bot. Ser. VIII, 6; 177—220, Pl. IX—XI.
- GUIGNARD, L. 1898. — Centrosomes in plants. Bot. Gaz. 25; 158—64.
- GUIGNARD, L. 1899a. — Sur la formation du pollen et la réduction chromatique dans le *Najas maior*. C. R. Acad. Sci. Paris 128; 202—7.
- GUIGNARD, L. 1899b. — Le développement du pollen et la réduction chromatique dans le *Najas maior*. Arch. Anat. Microscop. 2; 455—509, Pl. XIX, XX.
- GUIGNARD, L. 1900. — L'appareil sexuel et la double fécondation dans les Tulipes. Ann. Sci. Nat. Bot. Ser. VIII, 11; 365—87, Pl. IX—XI.
- GUIGNARD, L. 1901. — La double fécondation chez les Ranunculacées. Jour. de Bot. 15; 394—408.
- HAASE-BESSELL, G. 1916. — *Digitalis*-Studien. I. Zeitschr. Indukt. Abst. Vererb. Lehre 16; 293—314, Pl. I—IV.
- HAASE-BESSELL, G. 1921. — *Digitalis*-Studien. II. Zeitschr. Indukt. Abst. Vererb. Lehre 27; 1—26, Pl. I.
- HAASE-BESSELL, G. 1926. — *Digitalis*-Studien. III. Zeitschr. Indukt. Abst. Vererb. Lehre 42; 1—46.

- HAASE-BESSELL, G. 1928. — Karyologische Untersuchungen an *Anthurium Andraeanum*, *A. Scherzerianum* und *A. magnificum*. *Planta* 6; 767—89.
- HABERLANDT, G. 1919. — Zur Physiologie der Zellteilung. *Sitz. Ber. Akad. Wiss. Berlin*; 322—48.
- HABERLANDT, G. 1921. — Über experimentelle Erzeugung von Adventivembryonen bei *Oenothera Lamarckiana*. *Sitz. Ber. Akad. Wiss. Berlin*; 695—725.
- HABERLANDT, G. 1922. — Die Vorstufen und Ursachen der Adventivembryonie. *Sitz. Ber. Akad. Wiss. Berlin*; 386—406, Pl. I.
- HABERLANDT, G. 1923. — Zur Embryologie von *Allium odorum* L. *Ber. Deu. Bot. Ges.* 41; 174—9.
- HABERLANDT, G. 1925. — Zur Embryologie und Cytologie von *Allium odorum*. *L. Ber. Deu. Bot. Ges.* 43; 559—64.
- HAGERUP, O. 1926. — Konsdelenses Bygning og udvikling Hos *Koenigia Islandica* L. *Meddelelser om Grønland* 58; 199—204.
- HAGERUP, O. 1927. — *Empetrum Hermaphroditum* (LGE) HAGERUP, a new tetraploid bisexual species. *Dansk Bot. Ark.* 5; 1—17.
- HAGERUP, O. 1928. — Morphological and cytological studies of *Bicornes*. *Dansk Bot. Ark.* 6; 1—26.
- HAGUE, S. M. 1911. — A morphological study of *Diospyros virginiana*. *Bot. Gaz.* 52; 34—44, Pl. I—III.
- HÅKANSSON, A. 1924a. — Beiträge zur Zytologie eines *Epilobium*-Bastardes. *Bot. Not.* 3; 269—78.
- HÅKANSSON, A. 1924b. — Über die Chromosomenzahl einiger *Oenothera gigantea* Pflanzen. *Hereditas* 5; 93—6.
- HÅKANSSON, A. 1925. — Zur Zytologie der Gattung *Godetia*. *Hereditas* 6; 257—74.
- HÅKANSSON, A. 1926a¹⁾. — Zur Zytologie von *Celsia* und *Verbascum*. *Lunds Univ. Arsk. N. F. Avd.* 2, 21; 10, 1—47.
- HÅKANSSON, A. 1926b. — Über das Verhalten der Chromosomen bei der heterotypischen Teilung schwedischer *Oenothera Lamarckiana* und einiger ihrer Mutanten und Bastarde. *Hereditas* 8; 3, 255—304, Pl. III.
- HÅKANSSON, A. 1928. — Die Chromosomen einiger Scirpoideen. *Hereditas* 10; 277—92.
- HANCE, T. 1915. — Pollen development and degeneration in *Zebrina pendula* with special reference to the chromosomes. *Bull. Torr. Bot. Club* 42; 63—70, Pl. III—V.
- HANCE, T. 1918. — Variations in the number of somatic chromosomes in *Oenothera scintillans* DE VRIES. *Genetics* 3; 225—75, Pl. I—VII.
- HARRISON, J. W. H. 1922. — Interspecific sterility. *Nature* 110; 312.
- HARRISON, J. W. H. 1926. — Heterochromosomes and polyploidy. *Nature* 117; 50.
- HÄUSER, R. 1916. — Untersuchungen an Makrogametophyten von *Pipera*-*ceen*. *Beitr. Allgemein. Bot.* I, 115—49.

¹⁾ This paper is included in *Lunds. Univ. Arsk. Bd.* 21, the title page of which is dated 1925, though the paper is dated 1926.

- HEILBORN, O. 1922. — Taxonomical and cytological studies on cultivated Ecuadorian species of *Carica*. Arch. Bot. 17; 1—16.
- HEILBORN, O. 1926. — Bidrag till Violaceernas Cytologi. Svensk. Bot. Tids. 20; 414—19.
- HEILBORN, O. 1927. — Chromosome numbers in *Draba*. Hereditas 9; 59—68.
- HEILBORN, O. 1928a. — Chromosome studies in *Cyperaceae*. Hereditas 11; 182—92.
- HEILBORN, O. 1928b. — Zytologische Studien über Pollensterilität von Apfelsorten. Svensk. Bot. Tids. 22; 185—99.
- HEILBORN, O. (1926) 1929. — Chromosome numbers and taxonomy. Proc. Internat. Congr. Plant. Sci. Ithaca I; 307—10.
- HEIMANN-WINAWER, P. 1919. — Beiträge zur Embryologie von *Colchicum autumnale* L. Diss. Zurich; 1—64, Pl. I, II.
- HEIMANS, J. 1928. — Chromosomen und Befruchtung bei *Lilium martagon*. Rec. Trav. Bot. Neerl. XXV A; 138—167, Pl. VII.
- HEIMLICH, L. F. 1927. — Microsporogenesis in the cucumber. Proc. Nat. Acad. Sci. 13; 113—5.
- HEITZ, E. 1925a. — Unregelmässigkeiten bei der Reduktionsteilung von *Melandrium album*. Ber. Deu. Bot. Ges. 43; 77—80.
- HEITZ, E. 1925b. — Beitrag zur Cytologie von *Melandryum*. Arch. Wiss. Bot. I (Planta I); 241—59, Pl. I.
- HEITZ, E. 1926. — Der Nachweis der Chromosomen. Zeit. Bot. 18; 625—81, Pl. V.
- HEITZ, E. 1927a. — Chromosomen und Gestalt bei *Antirrhimum* und verwandten Gattungen. Planta 7; 392—410.
- HEITZ, E. 1927b. — Ueber multiple und aberrante Chromosomenzahlen. Abhandl. Gebiete Naturw. Hamburg 21; 3/4, 45—57, Pl. VIII.
- HELMS, A. & C. A. JØRGENSEN. 1925. — Birkene paa Maglemose Magle-Mose i grib. Skov. VIII, Kjøbenhavn. or Dansk. Bot. Tids. 39; 57—135, Pl. I.
- HEUSSER, C. 1919. — Over de voortplantingsorganen van *Hevea Brasiliensis* MÜLL. ARG. Archief voor Rubbercultuur Nederl. Indie 3; 455—514, Pl. I—XV.
- HEUSSER, K. 1915. — Die Entwicklung der generativen Organe von *Himantoglossum hircinum* SPR. (= *Loroglossum hircinum* RICH.). Beih. Bot. Centralbl. I. Abt; 32; 218—77.
- HICKS, G. C. 1928. — Chromosome studies in the *Cyperaceae* with special reference to *Scirpus*. Bot. Gaz. 86; 295—317, Pl. X, XI.
- HILL, S. E. 1927. — Chromosome numbers in the Genus *Bursa*. Biol. Bull. Woods Hole 53; 413—5.
- HIMMELBAUR, W. 1912. — Einige Abschnitte aus der Lebensgeschichte von *Ribes pallidum* O. u. D. Jahr. Hamburg Wiss. Anstalt 29; 3, (Beiheft) 151—245.
- HIMMELBAUR, W. 1926. — Zur Entwicklungsgeschichte von *Crocus sativus* L. Tschirch-Festschrift Tauchnitz Leipzig; 335—350.
- HIMMELBAUR, W. & W. HINDES. 1928. — Die Fortpflanzungsverhältnisse der

- Pfefferminze und ihrer mutmasslichen Stammeltern. Heil und Gewürzpflanz. Mitteil. Hortus Gesellschaft (Münich) 11; 1—24.
- HIRATA, K. 1924. — Sex reversal in hemp. Jour. Agr. Forest. Soc. Sapporo 16; 57—60.
- HIRATA, K. & K. AKIHAMA. 1927. — Über die Chromosomenzahl bei einigen *Allium*-Arten. Bot. Mag. Tokyo 41; 490, 597—600.
- HOAR, C. S. 1927. — Chromosome studies in *Aesculus*. Bot. Gaz. 84; 156—170, Pl. III—V.
- HOCQUETTE, M. 1922. — Observations sur le nombre des chromosomes chez quelques Ranunculacées. C. R. Soc. Biol. Paris. 87; 1301—3.
- HOLLINGSHEAD, L. 1928a. — Chromosomal chimeras in *Crepis*. Univ. Calif. Pub. Agr. Sci. 2; 12, 343—54, Pl. LIV, LV.
- HOLLINGSHEAD, L. 1928b. — A preliminary note on the occurrence of haploids in *Crepis*. Amer. Nat. 62; 282—4.
- HOLMGREN, J. 1913. — Zur Entwicklungsgeschichte von *Butomus umbellatus* L. Svensk. Bot. Tids. 7; 58—77, Pl. I.
- HOLMGREN, J. 1915. — Die Entwicklung des Embryo-sackes bei *Anthemis tinctoria*. Svensk. Bot. Tids. 9; 171—83.
- HOLMGREN, J. 1919. — Zytologische Studien über die Fortpflanzung bei den Gattungen *Erigeron* und *Eupatorium*. K. Svensk. Vet. Akad. Handl. 59; 7, 1—72.
- HONING, J. A. 1923. — *Canna*-crosses. I. Meded. Landbouwhoogeschool Wageningen 26; 2, 1—56, Pl. I—VIII.
- HORNE, A. DE. 1911. — Recherches sur la division de la cellule. I. Le duplicisme constant du chromosome somatique chez *Salamandra maculosa* LAU. et *Allium cepa* L. Archiv. Zellforsch. 6; 613—39, Pl. XXXV, XXXVI.
- HOROVITZ, S. 1926. — Estudio de cromosomas durante la formation del polen. Rev. centro. Estud. Agron. y Vet. Univ. Buenos Aires. 19; 472—85, Pl. I, II.
- HOWE, T. D. 1926. — Development of embryosac in *Grindelia squarrosa*. Bot. Gaz. 81; 280—96, Pl. XXVIII, XXIX.
- HUBER, A. 1927. — Beiträge zur Klärung verwandtschaftlicher Beziehung in der Gattung *Veronica*. I. Die Kernuntersuchungen in der Gattung *Veronica*. Jahr. Wiss. Bot. 66; 359—80.
- HUIE, L. H. 1897. — Changes in the cell organs of *Drosera rotundifolia* produced by feeding with egg albumen. Quart. Jour. Micros. Sci. 39; 387—426.
- HUIE, L. H. 1899. — Further study of cytological changes produced in *Drosera*. Pt. II. Quart. Jour. Micros. Sci. 42; 203—22.
- HUMPHREY, L. E. 1914. — A cytological study of the stamens of *Smilax herbacea*. Ohio Naturalist 15; 357—67, Pl. XVI, XVII.
- HURST, C. C. 1925. — Chromosomes and characters in *Rosa* and their significance in the origin of species. Expts. in Genetics 38, 534—550.
- HURST, C. C. 1927. — The mechanism of heredity and evolution. Eugenics Review 19; 19—31.
- HURST, C. C. 1928. — Differential polyploidy in the Genus *Rosa*. Verh. V Internat. Congr. Vererb. wiss. Berlin; 866—906.

- HUS, H. 1904. — Spindle formation in the pollen-mother-cells of *Cassia tomentosa* L. Proc. Calif. Acad. Sci. 3 series 2; 11, 329—54, Pl. XXX—XXXII.
- HUSKINS, C. L. 1925. — Chromosomes in *Avena*. Nature 115; 677—8.
- HUSKINS, C. L. 1926. — Genetical and cytological studies of the origin of false wild oats. Scient. Agr. 6; 303—13, Pl. I, II.
- HUSKINS, C. L. 1927a. — The origin of fatuoids in cultivated oats. Nature 119; 49.
- HUSKINS, C. L. 1927b. — On the genetics and cytology of fatuoid or false wild oats. Jour. Genetics 18; 315—64, Pl. XIX—XXI.
- HUSKINS, C. L. 1928a. — On the cytology of speltoid wheats in relation to their origin and genetic behaviour. Jour. Genetics 20; 103—22.
- HUSKINS, C. L. 1928b. — Discussion über Genombindungen by G. HAASE-BESSELL. Verh. V. Internat. Kongr. Vererb. Wiss. Berlin; 784.
- HUSKINS, C. L. 1928c. — Genetical and cytological studies of fatuoid oats and speltoid wheats. Verh. V. Internat. Hongr. Vererb. Wiss. Berlin; 907—916.
- HYDE, E. 1909. — The reduction division in the anthers of *Hyacinthus orientalis*. Ohio Naturalist 9; 539—44, Pl. XXXII.
- ICHIJIMA, K. 1926. — Cytological and genetic studies on *Fragaria*. Genetics 11; 590—604, Pl. I.
- IINUMA, M. 1926. — Triploidy of chromosomes in garden varieties of *Primula Sieboldii* E. MORR. Sci. Reports Tohoku Imperial Univ. Ser. IV; 2, 189—95.
- IKEDA, T. 1902. — Studies in the physiological functions of antipodals and related phenomena of fertilization in *Liliaceae*. I. *Tricyrtis hirta*. Bull. Coll. Agric. Tokyo Imp. Univ. 5; 41—72, Pl. III—VI.
- INARIYAMA, S. 1928. — On the spiral structure of chromosomes in *Hosta Sieboldiana* ENGL. Bot. Mag. Tokyo 42; 486—9.
- ISHIKAWA, C. 1897. — Studies of reproductive elements. III. Die Entwicklung der Pollenkörner von *Allium fistulosum* L., ein Beitrag zur Chromosomen-Reduktion im Pflanzenreiche. Jour. Coll. Sci. Imp. Univ. Tokyo 10; 193—225, Pl. XVI, XVII.
- ISHIKAWA, M. 1911a. — Cytologische Studien von Dahlien. Bot. Mag. Tokyo 25; 1—8, Pl. I.
- ISHIKAWA, M. 1911b. — The chromosome numbers of some species of *Compositae*. Bot. Mag. Tokyo 25; (399).
- ISHIKAWA, M. 1916. — A list of the numbers of chromosomes. Bot. Mag. Tokyo 30; 404—48.
- ISHIKAWA, M. 1918. — Studies on the embryosac and fertilization in *Oenothera*. Ann. Bot. 32; 279—317.
- ISHIKAWA, M. 1921. — On the chromosomes of *Lactuca*. Bot. Mag. Tokyo 35; (153—8).
- JANCZEWSKI, E. DE. 1907. — Monographie des groseilliers *Ribes* L. Mem. Soc. Phys. Hist. Nat. Genève 35; 199—517.
- JARETZKY, R. 1927a. — Die Degenerationerscheinungen in den Blüten von *Rumex flexuosus* FORST. Jahr. wiss. Bot. 66; 2, 301—20.
- JARETZKY, R. 1927b. — Einige Chromosomenzahlen aus der Familie der *Polygonaceae*. Ber. Deu. Bot. Ges. 45; 148—54.

- JARETZKY, R. 1928a. — Untersuchungen über Chromosomen und Phylogenie bei einigen Cruciferen. *Jahr. wiss. Bot.* 68; 1—45.
- JARETZKY, R. 1928b. — Bildungsabweichungen in Cruciferenblüten. *Planta* 5; 444—93.
- JARETZKY, R. 1928c. — Histologische und karyologische Studien an *Polygonaceae*. *Jahr. wiss. Bot.* 69; 357—490.
- JEFFREY, E. C. 1925. — Polyploidy and the origin of species. *Amer. Nat.* 59; 209—17.
- JESWIET, J. 1928. — Immunity and cross-fertilization in the genus *Saccharum*. *Rec. Trav. Bot. Neerl.* 25A; 185—202.
- JIMBO, T. 1927. — The chromosomes of *Wistaria*. *Bot. Mag. Tokyo* 41; 487—489.
- JOHNSON, D. S. 1910. — Studies in the development of the *Piperaceae*. I. The suppression and extension of sporogenous tissue in the flower of *Piper Betel* L. var. *monoicum*, C. D. C. *Jour. Exp. Zool.* 9; 715—49.
- JOHNSON, D. S. 1914. — Studies in the development of the *Piperaceae*. II. The structure and seed-development of *Peperomia hispidula*. *Amer. Jour. Bot.* 1; 323—39, 357—97, Pl. XXXVI—XXXVIII, XLI—XLIII.
- JØRGENSEN, C. A. 1923. — Studies on *Callitrichaceae*. *Dansk. Bot. Tids.* 38; 81—126.
- JØRGENSEN, C. A. 1927a. — Chromosomes and sex in *Vallisneria*. *Jour. Genetics* 18; 64—75.
- JØRGENSEN, C. A. 1927b. — Cytological and experimental studies in the genus *Lamium*. *Hereditas* 9; 126—36.
- JØRGENSEN, C. A. 1928. — The experimental formation of heteroploid plants in the genus *Solanum*. *Jour. Genetics* 19; 133—211, Pl. VI—X.
- JØRGENSEN, C. A. & M. B. CRANE, 1927. — Formation and morphology of *Solanum* chimaeras. *Jour. Genetics* 18; 247—73, Pl. XI—XVI.
- JUEL, H. O. 1897. — Die Kernteilungen in den Pollenmutterzellen von *Hemerocallis fulva* und die bei denselben auftretenden Unregelmässigkeiten. *Jahrb. Wiss. Bot.* 30; 205—26.
- JUEL, H. O. 1900a. — Vergleichende Untersuchungen über typische und parthenogenetische Fortpflanzung bei der Gattung *Antennaria*. *K. Svenk. Vet. Akad. Hand.* 33; 5, 1—59, Pl. I—VI.
- JUEL, H. O. 1903a. — Ein Beitrag zur Entwicklungs-geschichte der Samenanlage von *Casuarina*. *Flora* 92; 284—93, Pl. VIII.
- JUEL, H. O. 1903b. — Zur Entwicklungs-geschichte des Samens von *Cynomorium*. *Beih. Bot. Centralblatt* 13; 194—202.
- JUEL, H. O. 1905. — Die Tetradenteilungen bei *Taraxacum* und anderen Cichorien. *K. Svensk. Vet. Akad. Handl.* 39; 4, 1—22, Pl. I—III.
- JUEL, H. O. 1905. — Studien über die Entwicklungsgeschichte von *Saxifraga granulata*. *Nova Acta R. Soc. Sci. Upsala, Ser. IV*, 1; 9, 1—41, Pl. I—IV.
- JUEL, H. O. 1911. — Studien über die Entwicklungs-geschichte von *Hippuris vulgaris*. *Nova acta R. soc. Sci. Upsala, Ser. IV*, 2; 11, 1—26, Pl. I—III.
- JÜSSEN, F. J. 1928. — Die Haploidgeneration der Araceen und ihre Verwertung für das System. *Bot. Jahrb. Eng.* 62; 155—283, Pl. XIV—XXIV.

- KAGAWA, F. 1926. — Observation on the size and shape of chromosomes based upon their actual measurement. Proc. Imp. Acad. Tokyo 2; #3, 136—138.
- KAGAWA, F. 1926—1927. Cytological studies on *Triticum* and *Aegilops*. La Cellule 37; 229—234, Pl. I—V.
- KAGAWA, F. 1927. — The comparison of chromosomes among different species in *Triticum*. Proc. Imp. Acad. Tokyo 3; 5, 304—6.
- KAGAWA, F. 1928. — Cytological studies on *Triticum* and *Aegilops*. II. Jap. Journ. Bot. 4; 1—26, Pl. I—VII.
- KAJANUS, B. 1927. — Die Ergebnisse der genetischen Weizenforschung. Bibliograph. Genet. 3; 142—240.
- KANDA, M. 1920. — Field and laboratory studies of *Verbena*. Bot. Gaz. 69; 54—71, Pl. VI—IX.
- KARPECHENKO, G. D. 1924a. — The number and the genetic correlation of cultivated *Cruciferae*. Bull. Appl. Bot. Plant. Breed. 13; 1—14.
- KARPECHENKO, G. D. 1924b. — Hybrids of *Raphanus sativus* L. \times *Brassica oleracea* L. Jour. Genetics 14; 375—95, Pl. XXI, XXII.
- KARPECHENKO, G. D. 1925. — On the chromosomes of the *Phaseolinae*. (With English summary). Bull. Appl. Bot. Plant-Breed. 14; 143—8.
- KARPECHENKO, G. D. 1927a. — The production of polyploid gametes in hybrids. Hereditas 9; 349—68.
- KARPECHENKO, G. D. 1927b. — Polyploid hybrids of *Raphanus sativus* L. \times *Brassica oleracea* L. Bull. Appl. Bot. Plant-Breed. 17; 305—408, Pl. I, II.
- KARPECHENKO, G. D. 1928. — Polyploid hybrids of *Raphanus sativus* L. \times *Brassica oleracea* L. Zeitschr. Indukt. Abst. Vererb. Lehre. 48; 1—85, Pl. I—III.
- KATAYAMA, Y. 1928. — The chromosome number in *Phaseolus* and *Allium* and an observation on the size of stomata in different species of *Triticum*. Jour. Sci. Agr. Soc. Japan 303; 52—4.
- KAUFMANN, B. 1926. — Chromosome structure and its relation to the chromosome cycle. Amer. Jour. Bot. 13; 355—63.
- KAZAO, N. 1928. — Cytological studies on *Iris*. (Preliminary note). Bot. Mag. Tokyo 42; 262—6.
- KEEBLE, F. 1912. — Gigantism in *Primula sinensis*. Jour. Genetics 2; 163—88, Pl. XI.
- KELLY, J. P. 1920. — A genetical study of flower form and flower color in *Phlox Drummondii*. Genetics 5; 189—248, Pl. I.
- KEMP, H. P. 1910. — On the question of the occurrence of heterotypical reduction in somatic cells. Ann. Bot. 24; 775—804, Pl. LXVI, LXVII.
- KIEHN, C. 1917. — Die Nukleolen von *Galtonia candidans* DECSNE. Thesis, Marburg, 1—69.
- KIESSELBACH, T. A. & N. F. PETERSEN. 1925. — The chromosome number of maize. Genetics 10; 80—85.
- KIHARA, H. 1919a. — Über cytologische Studien bei einigen Getreidearten. Mitt. I. Bot. Mag. Tokyo 33; 17—38.
- KIHARA, H. 1919b. — Über cytologische Studien bei einigen Getreidearten.

- Mitt. II. Chromosomen-zahlen und Verwandtschaftsverhältnisse unter *Avena*-Arten. Bot. Mag. Tokyo 33; 94—7.
- KIHARA, H. 1921. — Über cytologische Studien bei einigen Getreidearten. Mitt. III. Über die Schwankungen der Chromosomenzahlen bei den Speziesbastarden der *Triticum*-Arten. Bot. Mag. Tokyo 35—36; 20—43, Pl. I.
- KIHARA, H. 1924. — Cytologische und genetische Studien bei wichtigen Getreidearten mit besonderer Rücksicht auf das Verhalten der Chromosomen und die Sterilität in den Bastarden. Mem. Coll. Sci. Kyoto Imp. Univ. Ser. B. 1; 1—200, Pl. I—V.
- KIHARA, H. 1925. — Chromosomes of *Rumex acetosella* L. Bot. Mag. Tokyo 39; (353—60).
- KIHARA, H. 1926. — Über die Chromosomenverhältnisse bei *Fragaria elatior*. Zeitschr. Indukt. Abst. Vererb. Lehre 41; 41—42.
- KIHARA, H. 1927a. — Über das Verhalten der „end to end“ gebundenen Chromosomen von *Rumex acetosella* und *Oenothera biennis* während der heterotypischen Kernteilung. Jahr. wiss. Bot. 66; 429—460.
- KIHARA, H. 1927b. — Über die Vorbehandlung einiger pflanzlichen Objekte bei der Fixierung der Pollenmutterzellen. Bot. Mag. Tokyo 41; 483, 124—8.
- KIHARA, H. 1928. — On the chromosomes of *Humulus japonicus* Bot. Mag. Tokyo 42; 237—8.
- KIHARA, H. & I. NISHIYAMA. 1928. — New aspects of chromosome behavior in pollen-mother-cells of tri-, tetra- and pentaploid wheat hybrids. (Eng. resume). Bot. Mag. Tokyo 42; 221—31.
- KIHARA, H. & T. ONO. 1923a. — Cytological studies on *Rumex* L. I. Chromosomes of *Rumex acetosa* L. Bot. Mag. Tokyo 37; 84—90. Abst. Jap. Jour. Bot. II, 2; 10—11, 1924.
- KIHARA, H. & T. ONO. 1923b. — Cytological studies on *Rumex* L. II. On the relation of chromosome number and sexes in *Rumex acetosa* L. Bot. Mag. Tokyo 37; 147—9. Abstr. Jap. Jour. Bot. II, 2; 11, 1924.
- KIHARA, H. & T. ONO. 1925. — The sex chromosomes of *Rumex acetosa*. Zeitschr. Indukt. Abst. Vererb. Lehre 39; 1—7, Pl. I.
- KIHARA, H. & T. ONO. 1926. — Chromosomenzahlen und systematische Gruppierung der *Rumex*-Arten. Zeitschr. Zellforsch. Mikr. Anat. 4; 475—81.
- KIKUCHI, M. 1926. — On the difference of chromosome numbers in *Linum*-species. (Prel. Report). Jour. Soc. Agr. For. Sapporo 18; 81, 26—37.
- KING, G. 1887—8. The species of *Ficus* of the Indo-Malayan and Chinese countries. Ann. Roy. Bot. Gard. Calcutta pt. I, II.
- KIRKWOOD, J. E. 1907. — Some features of pollen-formation in the *Cucurbitaceae*. Bull. Torr. Bot. Club 34; 221—42, Pl. XVII—XX.
- KLEINMAN, A. 1923. — Ueber Kern und Zellteilungen im Cambium. Bot. Arch. 4; 113—47, Pl. I—VI.
- KNOWLTON, H. E. 1924. — Pollenabortion in the peach. Proc. Amer. Soc. Hort. Sci.; 67—9.
- KOBEL, F. 1926a. — Die zytologischen Ursachen der Partiellen Pollensterilität bei Apfelf- und Birnsorten. Arch. Julius Klaus-Stift. Vererb. Forsch. 2; 39—57.

- KOBEL, F. 1926b. — Zytologische Abnormitäten bei Apfel- und Birnsorten und ihre Folgen. Verh. Schweiz. Naturf. Ges. Freiburg 107; 2, 205—6.
- KOBEL, F. 1926c. — Untersuchungen über den Fruchtansatz unserer Obstarten. Schweiz. Zeitschr. Obst Weinbau 35; 314—8.
- KOBEL, F. 1927. — Zytologische Untersuchungen an Prunoideen und Pomoi-deen. Arch. Julius Klaus-Stift. Vererb. Forsch. 3; 1—84.
- KOBEL, F. 1928. — Zytologische Untersuchungen an Kern- und Steinobst-arten. Verh. V. Internat. Kongr. Vererb. wiss. Berlin; 927—30.
- KOERNICKE, M. 1896. — Untersuchungen über die Entwicklung der Sexualorgane von *Triticum*, mit besonderer Berücksichtigung der Kernteilungen. Verh. Naturhist. Ver. Preus. Rheinl. Westf. 53; 149—85.
- KOERNICKE, M. 1903. — Der heutige Stand der pflanzlichen Zellforschung. Ber. Deu. Bot. Ges. 21; 66—134.
- KOJIMA, H. 1925. — On the meiosis and the chromosome numbers in different races of *Solanum melongena* L. Bot. Mag. Tokyo 39; (119—23).
- KOMURO, H. 1924. — Die Kerne und ihre Chromosomen in den Wurzelspitzen von *Trillium*. Bot. Mag. Tokyo 38; (171—4).
- KOZHUKHOW, Z. A. 1928. — Über Experimentelle Chromosomenzahlverdop-pelung in den somatischen Zellen mit abnormen Temperaturen. Angew. Bot. 10; 140—8.
- KOSTOFF, D. 1926. — Die Bildung der Pollenkörner bei einigen Varietäten von *Capsicum annuum*. (With German Summary). Annuaire Univ. Sofia Fac. Agron. 4; 101—21, Pl. I.
- KOZHUKHOW, Z. A. 1925. — Karyotypische Eigentümlichkeiten der kultivierten *Cucurbitaceae*. Bull. Appl. Bot. Plant-Breed. 14; 89—96, Pl. I.
- KOZHUKHOV, Z. A. 1927. — On experimental doubling of chromosome number in somatic cells with aid of abnormal temperatures. Mem. Soc. Nat. Kiev 27; 86—97.
- KUHN, E. 1928a. — Zur Zytologie von *Thalictrum*. Jahr. wiss. Bot. 68; 382—430, Pl. XII.
- KUHN, E. 1928b. — Zur Frage der Querteilung der Chromosomen in der so-matischen Prophase von *Capparis spinosa*. Ber. Deu. Bot. Ges. 46; 682—6.
- KÜKENTHAL, G. 1909. — *Cyperaceae Caricoideae*. Das Pflanzenreich IV, 20. Leipzig.
- KUSANO, S. 1915. — Experimental studies on the embryonal development in an Angiosperm. Jour. Coll. Agr. Tokyo 6; 7—120, Pl. V—IX.
- KUWADA, Y. 1911. — Meiosis in the pollen-mother-cells of *Zea Mays* L. Bot. Mag. Tokyo 25; 163—81.
- KUWADA, Y. 1915. — Über die Chromosomenzahl von *Zea Mays* L. Bot. Mag. Tokyo 29; 83—9.
- KUWADA, Y. 1919. — Die-Chromosomenzahl von *Zea Mays* L. Jour. Coll. Sci. Imp. Univ. Tokyo 39; 1—148.
- KUWADA, Y. 1925. — On the number of chromosomes in Maize. Bot. Mag. To-kyo 39; 227—334.
- KUWADA, Y. 1928. — An occurrence of the embryo-sacs in *Balanophora japo-nica* MAK. Bot. Mag. Tokyo 42; 117—29.

- KUYPER, J. 1914. — Die Entwicklung des weiblichen Geschlechts-Apparats bei *Theobroma Cacao*. Rec. Trav. Bot. Neer. 11; 37—43.
- KUZMINA, N. E., 1927. — On the chromosomes of *Beta vulgaris* L. Bull. Appl. Bot. & Plant Breed. 17; 242—52, Pl. I.
- LAGERBERG, T. 1909. — Studien über die Entwicklungs-geschichte und systematische Stellung von *Adoxa Moschatellina* L. K. Svensk. Vet. Akad. Hand. 44; 41—86, Pl. I—III.
- LAIBACH, F. 1907. — Zur Frage nach der Individualität der Chromosomen im Pflanzenreich. Beih. Bot. Centralbl. 22; 191—210, Pl. VIII.
- LAND, W. J. G. 1900. — Double fertilization in *Compositae*. Bot. Gaz. 30; 252—60, Pl. XV—XVI.
- LANGLET, O. 1927a. — Beiträge zur Zytologie der Ranunculaceen. Svensk. Bot. Tids. 21; 1—17.
- LANGLET, O. 1927b. — Zur Kenntnis der Polysomatischen Zellkerne im Wurzelmeristem. Svensk. Bot. Tids. 21; 397—422.
- LANGLET, O. 1928. — Einige Beobachtungen über die Zytologie der Berberidaceen. Svensk. Bot. Tids. 22; 169—84.
- LANGLET, O. & E. SØDERBERG. 1927. — Über die Chromosomenzahlen einiger Nymphaeaceen. Acta Horti Berg. 9; 85—104.
- LATTER, J. 1926. — The pollen development of *Lathyrus odoratus*. Ann. Bot. 40; 277—314, Pl. X—XII.
- LAWSON, A. A. 1898. — Some observations on the development of the karyokinetic spindle in the pollen-mother-cells of *Cobaea scandens* Cav. Proc. Calif. Acad. Sci. Ser. 111, 1; 170—88, Pl. XXXIII—XXXVI.
- LAWSON, A. A. 1912. — Nuclear osmosis as a factor in mitosis. Trans. Roy. Soc. Edinburgh 48; 137—62, Pl. XLVIII (4).
- LAWSON, A. A. 1913. — A study in chromosome reduction. Trans. Roy. Soc. Edinburgh 48; 601—27.
- LEHMANN, E. & J. SCHWEMMLE. 1927. — Genetische Untersuchungen in der Gattung *Epilobium*. Bibliotheca Bot. 95; 1—156, Pl. I—XVIII.
- LELIVELD, J. A. 1928. — Some remarks on the cytology of *Oenothera*. Rec. Trav. Bot. Néer. 25A; 237—43.
- LENOIR, M. 1923. — Le matériel nucléolaire pendant la télophase de la cinèse somatique dans le nucelle chez *Fritillaria imperialis* L. La Cellule 176; 1648—51.
- LESLEY, J. W. 1926. — The genetics of *Lycopersicum esculentum* MILL. 1. The trisomic inheritance of dwarf. Genetics 11; 352—4.
- LESLEY, J. W. 1928. — A cytological and genetical study of progenies of triploid tomatoes. Genetics 13, 1—43.
- LESLEY, J. W. & M. MANN. 1925. — Triploidy in the tomato. Science 61; 208.
- LESLEY, M. M. 1925. — Chromosomal chimeras in the tomato. Amer. Nat. 59; 570—4.
- LESLEY, M. M. 1926. — Maturation in diploid and triploid tomatoes. Genetics 11; 267—79, Pl. I, II.
- LESLEY, M. M. & H. B. FROST. 1927. — Mendelian inheritance of chromosome shape in *Matthiola*. Genetics 12; 449—60.

- LESLEY, M. M. & H. B. FROST. 1928. — Two extreme small *Matthiola* plants; A haploid with one and a diploid with two additional chromosome fragments. Amer. Nat. 62; 678, 22—33.
- LEVINE, M. 1916. — Somatic and reduction division in certain species of *Drosera*. Mem. New York. Bot. Gard. 6; 125—47, Pl. XVI—XIX.
- LEVITSKY, G. A. 1927. — Die Bildung bivalenter Chromosomen in der Gonogenese von *Beta vulgaris* L. Planta 3; 100—14.
- LEVITSKY, G. A. 1928. — Experimentally induced translocation of Chromosomes from one cell to another. (With English Summary). Jour. Soc. Bot. Russie 13; 19—25.
- LEVITSKY, G. A. & G. K. BENETZKAJA, 1927. — On the karyotype of *Solanum tuberosum*. Bull. Appl. Bot. Plant Breed. 17; 289—303, Pl. I.
- LEVITSKY, G. A. & N. E. KUZMINA, 1927. — Karyological investigations on the systematics and phylogenetics of the genus *Festuca*. Bull. Appl. Bot. Plant Breed. 12; 1—36, Pl. I—VI.
- LIEHR, O. 1916. — Ist die angenommene Verwandtschaft der *Helobiae* und *Polycarpiae* auch in ihrer Cytologie zu erkennen? Cohns. Beitr. Biol. Pflanz. 13; 135—220, Pl. III—VI.
- LITARDIÈRE, R. DE. 1921. — Remarque au sujet de quelques processus chromosomiques dans les noyaux du *Podophyllum peltatum* L. C. R. Acad. Sci. Paris 172; 1066—8.
- LITARDIÈRE, R. DE. 1923a. — Sur l'insertion fusoriale des chromosomes somatiques. Bull. Soc. Bot. France 70; 193—7.
- LITARDIÈRE, R. DE. 1923b. — Les anomalies de la caryocinèse somatique chez le *Spinacea oleracea* L. Rev. gener. Bot. 35; 369—381, Pl. VIII, IX.
- LITARDIÈRE, R. DE. 1925. — Sur l'existence de figures diploides dans le méristème radiculaire du *Cannabis sativa* L. La Cellule 35; 21—5.
- LJÜNDAHL, H. 1922. — Zur Zytologie der Gattung *Papaver*. Svensk. Bot. Tids. 16; 103—14.
- LJÜNDAHL, H. 1924. — Über die Herkunft der in der Meiosis konjugierenden Chromosomen bei *Papaver*-Hybriden. Svensk. Bot. Tids. 18; 279—91.
- LLOYD, F. E. 1902. — The comparative embryology of the *Rubiaceae*. Mem. Torr. Bot. Club 8; 27—112, Pl. V—XV.
- LONGLEY, A. E. 1924a. — Cytological studies in the genus *Rubus*. Amer. Jour. Bot. 11; 249—82, Pl. XI—XV.
- LONGLEY, A. E. 1924b. — Chromosomes in maize and maize relatives. Jour. Agr. Res. 28; 674—81, Pl. I—III.
- LONGLEY, A. E. 1925. — Segregation of carbohydrates in maize pollen. Science 61; 542—3.
- LONGLEY, A. E. 1926a. — Chromosomes and their significance in strawberry classification. Jour. Agr. Res. 32; 559—68.
- LONGLEY, A. E. 1926b. — Triploid *Citrus*. Jour. Wash. Acad. Sci. 16; 543—5.
- LONGLEY, A. E. 1927a. — Relationship of polyploidy to pollen sterility in the genera *Rubus* and *Fragaria*. Mem. Hort. Soc. New York 3; 15—17.
- LONGLEY, A. E. 1927b. — Supernumerary chromosomes in *Zea Mays*. Jour. Agr. Res. 35; 769—84.

- LONGLEY, A. E. 1927c. — Chromosomes in *Vaccinium*. Science 66; 567—8.
- LONGLEY, A. E. 1928. — Chromosomes in *Iris* species. Bull. Amer. Iris Soc. 29; 43—55, Pl. I—III.
- LUBIMENKO, W. & A. MAIGE. 1907. — Recherches cytologiques sur le développement des cellules-mères du pollen chez les Nymphaeacées. Rev. Gen. Bot. 19; 401—25, 433—58, 474—505, Pl. I—V.
- LUBLINER, K. 1925. — Recherches sur le développement de l'ovule et de la graine dans le genre *Podophyllum*. Bull. Int. Acad. Polon. Scienc. et Lett. Cl. Sc. Math. et Nar. Ser. B.; 379—402, Pl. XVII—XIX.
- LUNDEGARDH, H. 1909. — Über Reduktionsteilung in der Pollen-Mutterzellen einiger Dicotylen Pflanzen. Svensk. Bot. Tids. 3; 78—124, Pl. II, III.
- LUNDEGARDH, H. 1910. — Über Kernteilung in den Wurzelspitzen von *Allium cepa* und *Vicia Faba*. Svensk. Bot. Tids. 4; 174—96.
- LUNDEGARDH, H. 1912. — Chromosomen, Nukleolen und die Veränderungen im Protoplasma bei der Karyokinese. Cohn's Beitr. Biol. Pfl. 11; 373—542, Pl. XI—XIV.
- LUNDEGARDH, H. 1914a. — Zur Mechanik der Kernteilung. Svensk. Bot. Tids. 8; 161—80.
- LUNDEGARDH, H. 1914b. — Zur Kenntnis der heterotypischen Kernteilung. Arch. Zellforsch. 13; 145—57, Pl. IV.
- LUTMAN, B. F. 1925. — Senescence and rejuvenescence in the cells of the potato plant. Vt. Agr. Exp. Sta. Bull. 252; 1—76, Pl. I, II.
- LUTZ, A. M. 1907. — A preliminary note on the chromosomes of *Oenothera Lamarckiana* and one of its mutants *O. gigas*. Science N. S. 26; 151—2.
- LUTZ, A. M. 1908. — Chromosomes of the somatic cells of the *Oenotheras*. Science N. S. 27; 335.
- LUTZ, A. M. 1912. — Triploid mutants in *Oenothera*. Biol. Zentralbl. 32; 385—435.
- LUTZ, A. M. 1916. — *Oenothera* mutants with diminutive chromosomes. Amer. Jour. Bot. 3; 502—26, Pl. XXIV.
- LUTZ, A. M. 1917a. — Fifteen and sixteen chromosome *Oenothera* mutants. Amer. Jour. Bot. 4; 53—111.
- LUTZ, A. M. 1917b. — Characters indicative of the number of somatic chromosomes present in *Oenothera* mutants and hybrids. Amer. Nat. 51; 375—7.
- MACALLISTER, F. 1909. — The development of the embryosac of *Smilacina stellata*. Bot. Gaz. 48; 200—15, Pl. XV.
- MACALLISTER, F. 1913. — On the cytology and embryology of *Smilacina racemosa*. Trans. Wisc. Acad. Sci. Arts Letters 17; 599—660, Pl. LVI—LVIII.
- MACAVOY, B. 1913. — The reduction division in the microsporocytes of *Oenothera biennis*. Ohio Nat. 14; 189—94, Pl. X, XI.
- MCDERMOTT, L. F. 1910. — An illustrated key to the North American species of *Trifolium*. San Francisco, Cunningham Curtis and Welch, 325 pp.
- MCKENNEY, R. E. B. 1898. — Observations on the development of some embryosacs. Pub. Univ. Pennsylvania 2; 80—6, Pl. XI.
- MCPHEE, H. C. 1924. — Meiotic cytokinesis of *Cannabis*. Bot. Gaz. 78; 335—41, Pl. VII.

- MAEDA, T. 1928. — The spiral structure of chromosomes in the sweet pea (*Lathyrus odoratus* L.). Bot. Mag. Tokyo 42; 496, 191—5, Pl. IV.
- MAGNUS, W. 1913. — Die atypische Embryonalentwicklung der Podostemaceen. Flora 105; 275—336, Pl. XI—XIV.
- MALINOWSKI, E. 1925. — Les phénomènes de „linkage” qui ne peuvent pas être expliqués par la théorie de MORGAN. Acta. Soc. Bot. Pol. 3; 283—9.
- MALINOWSKI, E. 1926. — Linkage phenomena in wheat. Jour. Genetics 17; 157—85, Pl. XII—XV.
- MALINOWSKI, E. 1928. — Variegation and chromosomes in *Petunia*. Jour. Hered. 19; 521—6.
- MALINOWSKI, E. (1926) 1929. — A case of linkage of a higher order. Proc. Internat. Congr. Plant. Sci. Ithaca 1; 833—6.
- MALLOCH, W. S. & F. W. MALLOCH. 1924. — Species crosses in *Nicotiana*, with particular reference to *N. longiflora* × *N. Tabacum*, *N. longiflora* × *N. Sanderae*, *N. Tabacum* × *N. glauca*. Genetics 9; 261—91.
- MALTE, M. O. 1908. — Om Cellkärnans byggnad hos Euphorbiaceerna. (With German summary). Bot. Not. 75—87.
- MALTE, M. 1910. — Embryologiska och cytologiska undersökningar öfver *Mercurialis annua* L. Lund, Berlingska Boktryckeriet 1—96, Pl. I—III.
- MANEVAL, W. E. 1914. — The development of *Magnolia* and *Liriodendron* including a discussion of the primitiveness of the *Magnoliaceae*. Bot. Gaz. 57; 1—31, Pl. I—III.
- MANEY, T. J. & W. A. WELTER. 1928. — Chromosome characteristics of *Malus ioensis* and one of its large fruited forms. Proc. Amer. Soc. Hort. Sci. 25; 115—6.
- MANGELSDORF, A. J. 1927. — Origin of the garden strawberry. Jour. Hered. 18; 177—84.
- MANGELSDORF, A. J. and E. M. East. 1927. — Studies on the genetics of *Fragaria*. Genetics 12; 307—39.
- MANN, G. 1892. — The embryo-sac of *Myosurus minimus* L.: A cell study. Trans & Proc. Bot. Soc. Edinburgh 19; 351—428, Pl. IIIa, IV.
- MANN, M. 1922. — *Crepis* investigations. Univ. Calif. Agr. Exp. Sta. Report 146—7.
- MANN, M. 1925. — Chromosome number and individuality in the genus *Crepis*. I. A comparative study of the chromosome number and dimensions of nineteen species. Univ. Calif. Pub. Agr. Sci. 2; 297—314, Pl. I.
- MARCHAL, E. 1920. — Recherches sur les variations numériques des chromosomes dans la série végétale. Mem. Acad. Roy. Belg. II Series cl. IV, 8; 1—108, Pl. I—IV.
- MARSDEN-JONES, E. M. & W. B. TURRILL. 1928. — A tetraploid saxifrage of known origin. Nature 122; 58.
- MARTINS MANO, TH. 1905. — Nucléole et chromosomes dans le méristème radiculaire de *Solanum tuberosum* et *Phaseolus vulgaris*. La Cellule 22; 57—77.
- MARTZENITZINA, K. K. 1927. — The chromosomes of some species of the genus *Linum* L. Bull. Appl. Bot. Plant Breed. 27; 253—64, Pl. I.
- MATSUDA, H. 1928. — On the origin of big pollen grains with an abnormal number of chromosomes. La Cellule 38; 213—44, Pl. I—III.

- MELBURN, M. C. & W. P. THOMPSON. 1927. — The cytology of a tetraploid wheat hybrid (*Triticum spelta* × *T. monococcum*). Amer. Jour. Bot. 13; 327—33.
- MERRELL, W. D. 1900. — A contribution to the life history of *Silphium*. Bot. Gaz. 29; 99—133, Pl. III—X.
- MERRIMAN, M. L. 1904. — Vegetative cell division in *Allium*. Bot. Gaz. 37; 178—207, Pl. XI—XIII.
- MEURMAN, O. 1925a. — Über Chromosomenzahlen und Heterochromosomen bei diözischen Phanerogamen. Soc. Scient. Fenn. Comm. Biol. 2; 2, 1—4.
- MEURMAN, O. 1925b. — The chromosome behaviour of some dioecious plants and their relatives with special reference to the sex chromosomes. Soc. Scient. Fenn. Comm. Biol. 2; 3, 1—105.
- MEURMAN, O. 1928. — Cytological studies in the genus *Ribes* L. Hereditas 11; 289—356.
- MEYER, J. 1915. — Die *Crataegomespili* von BRONVAUX. Zeitschr. Indukt. Abst. Vererb. Lehre 13; 193—233.
- MEYER, K. 1909. — Untersuchungen über *Thismia clandestina*. Bull. Soc. Imp. Naturalistes Moscow, New Ser. 23; 1—18, Pl. I, II.
- MEYER, K. 1925. — Über die Entwicklung des Pollens bei *Leontodon autumnalis* L. Ber. Deu. Bot. Ges. 43; 108—14, Pl. V.
- MICHAELIS, P. 1925. — Zur Cytologie und Embryoentwicklung von *Epilobium*. Ber. Deu. Bot. Ges. 43; 61—67, Pl. III.
- MICHAELIS, P. 1926. — Über den Einfluss der Kälte auf die Reduktionsteilung von *Epilobium*. Planta 1; 569—82.
- MICHAELIS, P. 1928. — Über die experimentelle Erzeugung heteroploider Pflanzen bei *Epilobium* und *Oenothera*. Biol. Zentralbl. 48; 370—4.
- MICHELL, M. R. 1916. — The embryo-sac of *Richardia Africana* Kth. Bot. Gaz. 61; 326—7, Pl. XXI—XXIII.
- MICZYŃSKI, K. 1927. — A contribution to the cytology of wheats. Acta. Soc. Bot. Polon. 5; 12—19.
- MİYAJI, Y. 1913. — Untersuchungen über die Chromosomenzahlen bei einigen *Viola*-Arten. Bot. Mag. Tokyo 27; (443—460.)
- MİYAJI, Y. 1927a. — Untersuchungen über die Chromosomenzahlen bei einigen *Viola*-Arten. Bot. Mag. Tokyo 41; 483, 262—8.
- MİYAJI, Y. 1927b. — Über die somatischen Chromosomen einiger Ranunculaceen. Bot. Mag. Tokyo 41; 489, 568—9.
- MIYAKE, K. 1905. — Über Reduktionsteilung in den Pollenmutterzellen einiger Monokotylen. III. Jahr. wiss. Bot. 42; 83—120, Pl. III—V.
- MODILEWSKI, J. 1908. — Zur Embryobildung von *Gunnera chilensis*. Ber. Deu. Bot. Ges. 28A; 550—6, Pl. XI.
- MODILEWSKI, J. 1910. — Weitere Beiträge zur Embryobildung einiger Euphorbiaceen. Ber. Deu. Bot. Ges. 28; 413—8, Pl. XII.
- MODILEWSKI, J. 1918. — Cytological and embryological studies on *Neottia Nidus avis* (L.) RICH. Mem. Soc. Nat. Kieff 26; 1—55, Pl. I.
- MODILEWSKI, J. 1925. — Zur Kenntnis der Polyembryonie von *Allium odorum* L. Bull. Jard. Bot. Kieff II, 9—17, Pl. I.

- MODILEWSKI, J. 1928a. — Weitere Beiträge zur Embryologie und Cytologie von *Allium*-Arten. Bull. Jard. Bot. Kieff VII—VIII, 57—64, Pl. II.
- MODILEWSKI, J. 1928b. — Die Embryologische Entwicklung von *Thesium intermedium* L. Bull. Jard. Bot. Kieff VII—VIII, 65—70, Pl. III.
- MOL, W. E. DE. 1921a. — De l'existence de variétés hétéropléides de l'*Hyacinthus orientalis* L. dans les cultures hollandaises. Arch. Neerl. Sci. exact. et Nat. Ser. IIIB, 4; 18—143, Pl. I—XIII.
- MOL, W. E. DE. 1921b. — Over den invloed van Kultuuromstandigheden op habitus en partiele steriliteit der pollenkorrels van *Hyacinthus orientalis*. Versl. Gewone Vergadering Wis- en Natuurk. Afd. der Kon. Ak. v. Wet. te Amsterdam, 29.
- MOL, W. E. DE. 1921c. — Over het ontstaan van hypo-triploide dwerghyacinthen uit triploide Hollandsche variëteiten door somatische variatie. Versl. Gewone Vergadering Wis- en Natuurk. Afd. der Kon. Ak. v. Wet. te Amsterdam, 30.
- MOL, W. E. DE. 1923a. — Die Veredlung der holländischen Varietäten von *Hyacinthus orientalis* L. und damit in Zusammenhang einige Ergebnisse über Selbstbestäubung und Kreuzbestäubung bei diploiden und heteroploiden Formen dieser Pflanzenart. Studia Mendeliana, Brünn, 1—8.
- MOL, W. E. DE. 1923b. — Duplication of generative nuclei by means of physiological stimuli and its significance. Genetica 5; 225—72, Pl. I—VI.
- MOL, W. E. DE. 1924. — De Reductie-deeling bij eenige *Triticum*-soorten. Genetica 6; 289—94.
- MOL, W. E. DE. 1925. — Het celkundig-erfelijk onderzoek in dienst gesteld van de veredeling der Hyacinthen, Narcissen en Tulpen. (Englisch summary). Genetica 7; 111—8.
- MOL, W. E. DE. 1926a. — Heteroploidy and somatic variation in the Dutch flowering bulbs. Amer. Nat. 60; 334—9.
- MOL, W. E. DE. 1926b. — The nucleolar globules regarded as bearers of stimulating or finishing materials of the genes. Genetica 8; 537—42.
- MOL, W. E. DE. 1927a. — On chromosomal constrictions, satellites and nucleoli in *Hyacinthus orientalis*. Beitr. Biologie d. Pflanzen 15; 93—116.
- MOL, W. E. DE. 1927b. — Somatic segregation together with alteration of the chromosomal complement and of the nucleolar composition. Zeitschr. Indukt. Abst. Vererb. Lehre 45; 160—83.
- MOL, W. E. DE. 1927c. — Change of the number of chromosomes and its causes. X Congres International de Zoo. Sect. II; 598—602.
- MOL, W. E. DE. 1928a. — Een nieuwe veredelingsmethode. Het doelbewust benutten van meer-chromosomige bevruchtungskernen. Weekblad voor Bloembollencultuur, July 20; 1—8.
- MOL, W. E. DE. 1928b. — Zusammenfassung der zytologischen und genetischen Ergebnisse des Versuchs der Duplizierung und Quadruplizierung von Sexualkernen bei Hyazinthen und Tulpen. Zeitschr. Indukt. Abst. Vererb. Lehre 48; 145—8.
- MOL, W. E. DE. 1928c. — The originating of diploid and tetraploid pollen-

- grains in Duc van Thol Tulips (*Tulipa suaveolens*) dependent on the method of culture applied. *Genetica* 11; 119—212.
- MOL, W. E. DE. 1928d. — Producing at will of fertile diploid and tetraploid gametes in Duc van Thol, Scarlet (*Tulipa suaveolens* ROTH). Festschrift Hans Schinz Beiblatt # 15 Vierteljahrs-schrift Naturforsch. Gesell. Zürich 73; 73—97, Pl. IV, V.
- MORINAGA, T. 1928. — Preliminary note on interspecific hybridisation in *Brassica*. *Proc. Imp. Acad. Tokyo* 4; 620—22.
- MOSER, F. 1926. — Untersuchungen zur Phaenanalyse und Zytologie des Artbastardes *Primula pubescens* JACQ. (*Primula auricula* L. \times *Primula hirsuta* ALL.) Diss. Zurich; 1—98, Pl. XI—XIII.
- MOTTIER, D. M. 1897. — Beiträge zur Kenntnis der Kernteilung in den Pollenmutterzellen einiger Dikotylen und Monokotylen. *Jahr. wiss. Bot.* 30; 167—204, Pl. III, IV.
- MOTTIER, D. M. 1905. — The development of the heterotypic chromosomes in pollen-mother-cells. *Bot. Gaz.* 40; 171—7.
- MOTTIER, D. M. 1914. — Mitosis in the pollen-mother-cells of *Acer negundo* L. and *Staphylea trifolia* L. *Ann. Bot.* 28; 115—33, Pl. IX, X.
- MOTTIER, D. M. & M. NOTHNAGEL. 1913. — The development and behavior of the chromosomes in the first or heterotypic mitosis of the pollen-mother cells of *Allium cernuum* ROTH. *Bull. Torr. Bot. Club* 40; 555—65, Pl. XXIII, XXIV.
- MÜHLMANN, M. 1926. — Die Neurogene Theorie der Caryokinese. *Zeitschr. wiss. Biol. Abt. B. Zeitschr. Zellforsch. mikrosk. Anat.* 30; 377—82.
- MÜLLER, C. 1910. — Über karyokinetische Bilder in den Wurzelspitzen von *Yucca*. *Jahr. Wiss. Bot.* 47; 99—119, Pl. I—III.
- MÜLLER, C. 1912. — Kernstudien an Pflanzen I, II. *Arch. Zellforsch.* 8; 1—51, Pl. I, II.
- MÜLLER, K. O. 1925. — Neue Wege und Ziele in der Kartoffelzüchtung. *Beitr. Pflanzenzucht* 8; 45—72.
- MÜNTZING, A. 1928. — Chromosome number, nuclear volume and pollen-grain size in *Galeopsis*. *Hereditas* 10; 241—60.
- MÜRBECK, S. 1902. — Über die Embryologie von *Ruppia rostellata* KOCH. *K. Svensk. Vet. Akad. Handl.* 36; 1—21, Pl. I—III.
- MÜRBECK, S. 1916. — Über die Organisation, Biologie und verwandtschaftlichen Beziehungen der Neuradoideen. *Lunds Univ. Arsskrift. Afd. 2, 12*; 6, 1—28, Pl. I—III.
- MÜRBECK, S. 1925. — Monographie der Gattung *Celsia*. *Lunds Univ. Arsk. N. A. afd. 2*; 22, 1—237, Pl. I—XVI. (K. Lysiografiska salls Kapets Hand. n. f. 38, 1; 1—23, Pl. I—XVI).
- NAGAO, M. 1928. — On the chromosome number of *Pharbitis Nil.* *Chois. Bot. Mag. Tokyo* 42; 501.
- NAGAO, M. 1911. — Cytological studies on the nuclear division of the pollen-mother-cells of some cereals and their hybrids. *Jour. Coll. Agric. Tohoku Imp. Univ. Sapporo* 4; 173—90, Pl. X—XIV.
- NAMIKAWA, I. & M. HIGASHI. 1928. — On the number of chromosomes in

- Diospyros Kaki* L. f. and *Diospyros Lotus* L. Bot. Mag. Tokyo, 42; 436—38.
- NANNETTI, A. 1912. — Sulle probabili cause della partenocarpia del *Solanum muricatum* Ait. Nuov. Giorn. Bot. Ital. N. S. 19; 93—111, Pl. VII.
- NAWA, N. 1928. — Some cytological observations in *Tricyrtis*, *Sagittaria* and *Lilium*. Bot. Mag. Tokyo 42; 493, 33—36, Pl. I.
- NAWASCHIN, M. 1916. — Un cas d'assymétrie nucléaire chez les Composées. (French summary). Jour. Soc. Bot. Russ. I; 178—182.
- NAWASCHIN, M. 1925a. — Morphologische Kernstudien der *Crepis*-Arten in Bezug auf die Artbildung. Zeitschr. Zellforsch. Mikrosk. Anat. 2; 98—111.
- NAWASCHIN, M. 1925b. — Polyploid mutations in *Crepis*. Triploid and Pentaploid mutants of *Crepis capillaris*. Genetics 10; 583—92, Pl. I.
- NAWASCHIN, M. 1926. — Variabilität des Zellkerns bei *Crepis*-Arten in Bezug auf die Artbildung. Zeitschr. Zellforsch. Mikrosk. Anat. 4; 171—215.
- NAWASCHIN, M. 1927a. — Ein Fall von Meroгонie infolge Artkreuzung bei Compositen. Ber. Deu. Bot. Ges. 45; 115—26.
- NAWASCHIN, M. 1927b. — On the variation of the number and morphological characters of the chromosomes in interspecific hybrids. Bull. Appl. Bot. Plant Breed. 17; 121—50.
- NAWASCHIN, M. 1927c. — Über die Veränderung von Zahl und Form der Chromosomen infolge der Hybridisation. Zeitschr. Zellforsch. Mikrosk. Anat. 6; 195—233.
- NAWASCHIN, M. 1927d. — Ein Fall von (echter) Meroгонie hervorgerufen durch Artkreuzung bei Compositen. (With German summary). Jour. Soc. Bot. Russie 12; 87—98.
- NAWASCHIN, M. 1927e. — Un cas de mérogonie chez les Composées. C. R. Acad. Sci. U. R. S. S.; 88—90.
- NAWASCHIN, S. 1911. — Über eine Art der Chromatin-diminution bei *Tradescantia virginica*. Ber. Deu. Bot. Ges. 29; 437—49, Pl. XVI.
- NAWASCHIN, S. 1910. — Näheres über die Bildung der Spermatkerne bei *Lilium Martagon*. Ann. Jard. Bot. Buitenzorg Supp. 3; 873—904, Pl. XXXIII, XXXIV.
- NAWASCHIN, S. 1926. — Sur l'association des chromosomes deux par deux durant la cinèse somatique. C. R. Acad. Sci. U. R. S. S.; 142—144.
- NAWASCHIN, S. 1927. — Zellkerndimorphismus bei *Galtonia candicans* Des. und einigen verwandten Monokotylen. Ber. Deu. Bot. Ges. 45; 415—28, Pl. VI.
- NĚMEC, B. 1898a. — Über abnorme Kernteilungen in der Wurzelspitze von *Allium Cepa*. Sitz. Ber. Böhm. Ges. wiss. Prague Math. Naturw. Kl.; 1—10, 1 Pl.
- NĚMEC, B. 1898b. — Über den Pollen der petaloiden Antheren von *Hyacinthus orientalis* L. Bull. Internat. Acad. Sci. Bohême, Sci. math. et nat. 5; 17—23.
- NĚMEC, B. 1899. — Über Kern- und Zellteilung bei *Solanum tuberosum*. Flora 86; 214—27.
- NĚMEC, B. 1903a. — Über ungeschlechtliche Kernverschmelzungen. II. Sitz. Ber. Böhm. Ges. wiss. Prague Math. Naturw. Kl. 27; 1—9.

- NĚMEC, B. 1903b. — Über ungeschlechtliche Kernverschmelzungen. III. Sitz. Ber. Böhm. Ges. wiss. Prague Math-Naturw. Kl. 42; 1—11.
- NĚMEC, B. 1904. — Über die Einwirkung des Chloralhydrats auf die Kern- und Zellteilung. Jahr. wiss. Bot. 39; 645—730.
- NĚMEC, B. 1910a. — Das Problem der Befruchtungsvorgänge und andere zytologische Fragen. Berlin 1—532, Pl. I—V.
- NĚMEC, B. 1925. — Untersuchungen über die Eriophyiden-Gallen. Studies Plant Phys. Labor. Charles Univ. Prague 2; 47—106, Pl. I—III.
- NĚMEC, B. 1926. — Multipolare Teilungsfiguren und vegetative Chromosomenreduktion. Biol. General. 2; 96—103.
- NETROUFAL, F. 1927. — Zytologische Studien über die Kulturrassen von *Brassica oleracea*. Oesterr. Bot. Zeit. 76; 101—15, Pl. I, II.
- NEWTON, W. C. F. 1924. — Studies on somatic chromosomes. I. Pairing and segmentation in *Galtonia*. Ann. Bot. 38; 197—206, Pl. X.
- NEWTON, W. C. F. 1926. — Chromosome studies in *Tulipa* and some related genera. Jour. Linn. Soc. Lond. 47; 339—54, Pl. VII—X.
- NICHOLS, M. L. 1908. — The development of the pollen of *Sarracenia*. Bot. Gaz. 45; 31—37, Pl. V.
- NIKOLAWEA, A. 1922a. — Zur Zytologie der *Triticum* Arten. Zeitschr. Indukt. Abst. Vererb. Lehre 29; 208—9.
- NIKOLAWEA, A. 1922b. — Zur Kenntnis der Chromosomenzahl in der Gattung *Avena*. Zeitschr. Indukt. Abst. Vererb. Lehre 29; 209—10.
- NIKOLAWEA, A. 1923. — Étude cytologique du genre *Triticum*. (With French summary). Bull. Appl. Bot. Plant Breed. 13; 33—44.
- NIKOLAWEA, A. 1924. — Notes on the cytology of rye-wheat hybrids. Jour. Landwirtschaft. wiss. 1; 570—6.
- NIKOLAWEA, A. (1924) 1925. — Essai d'une étude caryologique de *Nicotiana rustica* et *N. Tabacum* et de la pseudogamie de ce dernier. (With French summary). Jour. Soc. Bot. Russie 9; 15—20.
- NISHIYAMA, I. 1928a. — On hybrids between *Triticum spelta* and two dwarf wheat plants with 40 somatic chromosomes. Bot. Mag. Tokyo 42; 154—75, English resume 175—7. Author's abstract. Jap. Jour. Bot. 4; (45).
- NISHIYAMA, I. 1928b. — Reduction division in *Lycoris*. Bot. Mag. Tokyo 42; 509—13.
- NITZSCHKE, J. 1914. — Beiträge zur Phylogenie der Monokotylen gegründet auf der Embryo-sack Entwicklung apokarper Nymphaeaceen und Helobien. Cohns. Beitr. Biol. Pfl. 14; 223—67.
- NODA, K. 1926. — Über die Chromosomen von *Rumex scutatus*. Jap. Jour. Bot. 3; 21—4.
- NOTHNAGEL, M. 1916. — Reduction divisions in the pollen-mother-cells of *Alium tricoccum*. Bot. Gaz. 61; 453—76, Pl. XXVIII—XXX.
- OEHLER, E. 1927. — Entwicklungsgeschichtlich-zytologische Untersuchungen an einigen saprophytischen Gentianaceen. Planta 3; 641—733, Pl. I—V.
- OEHLKERS, F. 1922. — Entwicklungsgeschichte von *Monophyllaea Horsfieldii*. Beih. Bot. Centralbl. 39; Abt. 1, 128—15, Pl. XVI.

- OEHLKERS, F. 1926. — Erbllichkeit und Zytologie einiger Kreuzungen mit *Oenothera strigosa* (Vererbungsversuche an Oenotheren IV). Jahr. wiss. Bot. 65; 401—46, Pl. II.
- OEHLKERS, F. 1927. — Entwicklungsgeschichte der Pollensterilität einiger Oenotheren. Zeitschr. f. Indukt. Vererb. Lehre 43; 265—84.
- OEHM, G. 1924. — Studien über Riesen- und Zwergformen einheimischer Pflanzen: *Hedera*. Beih. Bot. Centralbl. 40; 237—94, Pl. VI—XI.
- OKABE, S. 1927. — Cytological studies on *Prunus*. (A preliminary note). Bot. Mag. Tokyo 41; 398—404.
- OKABE, S. 1928. — Zur Cytologie der Gattung *Prunus*. Sc. Reports Tōhoku Imp. Univ. Ser. 111; 4, 733—43.
- OKSIJUK, P. 1927. — Entwicklungsgeschichte der Zuckerrübe (*Beta vulgaris*). Bull. Jard. Bot. Kieff V—VI; 148—64, Pl. I, II.
- ONO, T. 1926a. — Chromosomes of *Rumex*. Bot. Mag. Tokyo 40; 474, 369.
- ONO, T. 1926b. — Embryologische Studien an *Heloniopsis breviscapa*. Sc. Reports Tōhoku Imper. Univ. Ser. IV, 2; 94—104.
- ONO, T. 1926c. — Grossenverhältnis der Geschlechtschromosomen von *Rumex acetosa* L. Sc. Reports Tōhoku Imper. Univ. Ser. IV, 2; 159—60.
- ONO, T. 1927a. — Reducing division in triploid *Primula* (Preliminary note). Bot. Mag. Tokyo 41; 490, 601—4.
- ONO, T. 1927b. — Chromosomenzahl von *Rumex sanguineus*. Bot. Mag. Tokyo 41; 490, 632—3.
- ONO, T. 1928. — Further investigations on the cytology of *Rumex*. I. The development of the embryosac and the embryo of *R. acetosa*. II. The occurrence of the triploid female of *R. acetosa*. III. Reducing division of the triploid intersexual plant of *R. acetosa*. IV. Diploid nuclear plates in pollen-mother-cells of *R. acetosa*. V. Chromosomes of *R. vesicarius*. Bot. Mag. Tokyo 42; 524—32, English resume 532—3.
- ONO, T. & N. SHIMOTOMAI. 1928. — Triploid and tetraploid intersex of *Rumex acetosa* L. Bot. Mag. Tokyo 42; 266—270.
- OSAWA, J. 1913a. — Studies on the cytology of some species of *Taraxacum*. Archiv. Zellforsch. 10; 450—69, Pl. XXXVII, XXXVIII.
- OSAWA, J. 1913b. — On the development of the pollen-grain and embryosac of *Daphne* with special reference to the sterility of *Daphne odora*. Jour. Coll. Agr. Univ. Tokyo 1—264, Pl. XXV—XXVII.
- OSAWA, J. 1920. — Cytological and experimental studies in *Morus* with special reference to triploid mutants. Bull. Imp. Ser. Exp. Sta. Tokyo; 318—70, Pl. XII—XIV.
- OSTENFELD, C. H. 1928. — The present state of knowledge of hybrids between species of flowering plants. Jour. Roy. Hort. Soc. London 53; 31—44.
- OSTERWALDER, A. 1898. — Beiträge zur Embryologie von *Aconitum Napellus*. L. Flora 85; 254—92.
- OSTERWALDER, A. 1910. Blütenbiologie, Embryologie und Entwicklung der Frucht unserer Kernobstbäume. Landw. Jahrb. 39; 917—98, Pl. XXV—XXIX.

- OTTLEY, A. M. 1918. — A contribution to the life history of *Impatiens sultanii*. Bot. Gaz. 66; 289—317, Pl. XIV, XV.
- OVEREEM, C. VAN, 1921. — Über Formen mit abweichender Chromosomenzahl bei *Oenothera*. Beih. Bot. Centralbl. I. Abt. 38; 73—113, Pl. II—VII.
- OVEREEM, C. VAN. 1922. — Über Formen mit abweichender Chromosomenzahl bei *Oenothera*. Beih. Bot. Centralbl. I. Abt. 39; 1, 80, Pl. I—XV.
- OVERTON, E. 1891. — Beitrag zur Kenntnis der Entwicklung und Vereinigung der Geschlechtsproducte bei *Lilium martagon*. Festschrift f. K. W. v. Nägeli u. A. v. Kölliker, Zürich.
- OVERTON, E. 1893a. — Über die Reduction der chromosomen in den Kernen der Pflanzen. Vierteljahrsschr. Naturf. Ges. Zürich 38; 169—86.
- OVERTON, E. 1893b. — On the reduction of chromosomes in the nuclei of plants. Ann. Bot. 7; 139—43.
- OVERTON, J. B. 1904. — Über Parthenogenesis bei *Thalictrum purpurascens*. Ber. Deu. Bot. Ges. 22; 274—83, Pl. XV.
- OVERTON, J. B. 1905. — Über Reduktionsteilung in den Pollenmutterzellen einiger Dikotylen. Jahr. wiss. Bot. 42; 121—53, Pl. VI, VII.
- OVERTON, J. B. 1909. — On the organization of the nuclei in the pollen-mother-cell of certain plants with especial reference to the permanence of the chromosomes. Ann. Bot. 23; 19—61, Pl. I—III.
- OVERTON, J. B. 1922. — The organization of the nuclei in the root-tips of *Podophyllum peltatum*. Trans. Wisc. Acad. Sci. Arts. Letters 20; 275—322, Pl. VII.
- PACE, L. 1907. — Fertilization in *Cypripedium*. Bot. Gaz. 44; 353—74, Pl. XXIV—XXVII.
- PACE, L. 1909. — The Gametophytes of *Calopogon*. Bot. Gaz. 48; 126—37, Pl. VII—IX.
- PACE, L. 1912. — *Parnassia* and some allied genera. Bot. Gaz. 54; 306—29, Pl. XIV—XVII.
- PACE, L. 1913. — Apogamy in *Atamosco*. Bot. Gaz. 56; 376—94, Pl. XIII, XIV.
- PACE, L. 1914. — Two species of *Gyrostachys*. Bull. Baylor Univ. 17; 2—16.
- PALM, B. 1925. — Studien über Konstruktionstypen und Entwicklungswege des Embryosackes der Angiospermen. Akad. Abh. Stockholm; 1—259.
- PALM, B. & A. A. L. RUTGERS. 1917. — The embryology of *Aucuba japonica*. Rec. Trav. Bot. Neer. 14; 119—26.
- PELLEW, C. & F. M. DURHAM. 1915. — The genetic behavior of the hybrid *Primula Kewensis* and its allies. Jour. Genetics 5; 159—82, Pl. XXV—XXIX.
- PENLAND, C. W. T. 1923. — Cytological behavior in *Rosa*. Bot. Gaz. 76; 403—12, Pl. XXXI, XXXII.
- PERCIVAL, J. 1921. — The wheat plant, a monograph. Duckworth & Co., London.
- PERCIVAL, J. 1923. — Chromosome numbers in *Aegilops*. Nature 111; 810.
- PERCIVAL, J. 1926¹⁾. — The morphology and cytology of some hybrids of *Aegilops ovata* ♀ × wheats ♂. Jour. Genetics 17; 49—68, Pl. II—VI.

¹⁾ This paper was published in Journal No. 1 of volume 17 in 1926, but the title page of vol. 17 gives the date 1927.

- PETERS, C. A. 1897. — Reproductive organs and embryology of *Drosera*. Proceed. Amer. Assoc. Adv. Science, P. 275.
- PETERSEN, H. E. 1914. — Indledende Studier over Polymorphien hos *Anthriscus silvestris* (L.) HOFFM. Diss. Kopenhagen 1—140, Pl. I—XVIII.
- PIECH, K. 1924. — Über die Teilung des primären Pollenkerns und die Entstehung der Spermazellen bei *Scirpus paluster* L. Bull. Internat. Acad. Polon. Cracovie Ser. B; 601—21, Pl. IV, V.
- PIECH, K. 1928a. — Über die Entstehung der Generativen Zelle bei *Scirpus uniglumis* LINK. durch freie Zellbildung. Planta 6; 96—117, Pl. I.
- PIECH, K. 1928b. — Zytologische Studien an der Gattung *Scirpus*. Bull. de l'Acad. Pol. Scienc. et Lettres Cl. Sc. Math Nat. Ser. B; 1—43, Pl. I—V.
- PIECH, K. & MOLDENHAWER, K. 1927. — Zytologische Untersuchungen an Bastarden zwischen *Raphanus* und *Brassica*. Bull. Internat. Acad. Polon. Cracovie, Ser. B; 27—38, Pl. XIII.
- PISEK, A. 1922. — Chromosomenverhältnisse, Reduktionsteilung und Revision der Keimentwicklung der Mistel (*Viscum album*). Ber. Deu. Bot. Ges. 40; 406—9.
- PISEK, A. 1923. — Chromosomenverhältnisse, Reduktionsteilung und Revision der Keimentwicklung der Mistel (*Viscum album*). Jahr. Wiss. Bot. 62; 1—19.
- PISEK, A. 1924. — Antherenentwicklung und meiotische Teilung bei der Wacholdermistel (*Arceuthobium oxycedri* (D.C.) M.B.); Antherenbau und Chromosomenzahlen von *Loranthus europaeus* Jacq. Sitz. Ber. Akad. Wiss. wien. Math. Natur. K. Abt. I, 133; 1—15, Pl. I.
- PLEIJEL, C. 1925. — Skandinaviens samkonade *Valeriana*-formes. Acta. Horti Bergiani 8; 71—87.
- PODDUBNAJA, W. 1927. — Spermatogenesis bei einigen Compositen. Planta 7; 284—98.
- POPENOE, P. 1915. — Annual meeting of American Genetic Association. Science, N. S. 42; 391—6.
- PROZINA, M. (1924) 1925. — Recherches caryologiques sur le Tournesol. I. Division somatique chez *Helianthus annuus* (With French summary) Jour. Soc. Bot. Russie 9; 63—8.
- PUNNETT, R. C. 1927. — Linkage groups and chromosome number in *Lathyrus*. Proc. Roy. Soc. London, Ser. B, 102; 236—8.
- QUISENBERRY, K. S. 1927. — Chromosome numbers in buckwheat species. Bot. Gaz. 83; 85—8, Pl. VI.
- RADERMACHER, A. 1925. — Die Gametophyten von *Nipa fruticans* und *Actinophloeus Macarthurii* BECC. MAC. sowie ein Versuch die Systematik der Angiospermen durch die haploide Generation zu ergänzen. Ann. Jar. Bot. Buitenzorg 35; 1—54, Pl. I—IV.
- RAITT, A. H. 1916. — The development of the ovule of *Impatiens pallida* NUTT. Plant World 19; 195—203.
- RANDOLPH, L. T. 1928. — Chromosome numbers in *Zea Mays* L. Memoir. Corn. Univ. Agr. Exp. Sta. 117; 1—44, Pl. I—III.
- RANDOLPH, L. F. & B. MCCLINTOCK. 1926. — Polyploidy in *Zea Mays* L. Amer. Nat. 60; 99—102.

- RAVES, J. F. 1926. — Mitosis in *Anacyclus pyrethrum*. Jour. Roy. Micros. Soc. 46; 193—203, Pl. XVI—XIX.
- REED, T. 1914. — The nature of the double spireme in *Allium cepa*. Ann. Bot. 28; 271—81, Pl. XVIII—XIX.
- REEVES, R. G. 1925. — Chromosome studies of *Zea Mays* L. Iowa Acad. Sci. Proc. 32; 171—5.
- REGEMORTER, D. VAN. 1926—27. — Les troubles cinétiques dans les racines chloralisées et leur portée pour l'interprétation des phénomènes normaux. La Cellule 37; 43—74, Pl. I.
- RENNER, O. 1914. — Befruchtung und Embryobildung bei *Oenothera Lamarckiana* und einigen verwandten Arten. Flora 107; 115—150, Pl. XII, XIII.
- RENNER, O. 1928. — Über Koppelungswechsel bei *Oenothera*. Verh. V. Inter. Kongr. Vererb. wiss. Berlin; 1216—1220.
- RICHARDS, A. 1909. — Mitosis in the root-tip cells of *Podophyllum peltatum*. Kansas Univ. Sci. Bull. 5; 87—93.
- RISSE, K. 1926. — Chromosomenzahlen und Periplasmodiumbildung in der Familie der Dipsacaceen. Ber. Deu. Bot. Ges. 44; 296—8.
- RISSE, K. 1928. — Beiträge zur Zytologie der Dipsacaceen. Bot. Arch. 23; 266—88.
- ROCÉN, T. 1926. — Einige Züge von der Embryologie der Caryophyllazeen. Svensk. Bot. Tids. 20; 97—8.
- ROCÉN, T. 1927. — Zur Embryologie der Centrospermen. Dissert. Uppsala.
- ROCÉN, T. 1928. — Beitrag zur Embryologie der Crassulaceen. Svensk. Bot. Tids. 22; 368—76.
- ROSCOE, M. 1927a. — Cytological studies in the genus *Wisteria*. Bot. Gaz. 84; 171—86, Pl. VI.
- ROSCOE, M. 1927b. — Meiotic irregularities in a gigas form of *Potentilla*. Bot. Gaz. 84; 307—16, Pl. X.
- ROSCOE, M. 1927c. — Cytological studies in the genus *Typha*. Bot. Gaz. 84; 392—406, Pl. XI, XII.
- ROSENBERG, O. 1899. — Physiologisch-cytologische Untersuchungen über *Drosera rotundifolia* L. Diss. Uppsala, 1—127, Pl. I, II.
- ROSENBERG, O. 1901. — Über die Embryologie von *Zostera marina* L. Bihang. K. Svensk. Vet. Akad. Hand. 27, Afd. 3, 6; 1—24, Pl. I, II.
- ROSENBERG, O. 1903. — Das Verhalten der Chromosomen in einer hybriden Pflanze. Ber. Deu. Bot. Ges. 21; 110—9, Pl. VII.
- ROSENBERG, O. 1904a. — Über die Tetradenteilung eines *Drosera*-Bastardes. Ber. Deu. Bot. Ges. 22; 47—53, Pl. IV.
- ROSENBERG, O. 1904b. — Über die Individualität der Chromosomen im Pflanzenreich. Flora 93; 251—9.
- ROSENBERG, O. 1905. — Zur Kenntnis der Reduktionsteilung in Pflanzen. Bot. Nat.; 1—24.
- ROSENBERG, O. 1907a. — Cytological studies on the apogamy in *Hieracium*. Bot. Tids. 28; 143—70, Pl. I, II.
- ROSENBERG, O. 1907b. — Zur Kenntnis der präsynaptischen Entwicklungsphasen der Reduktionsteilung. Svensk. Bot. Tids. 1; 398—410, Pl. VIII.

- ROSENBERG, O. 1909a. — Zur Kenntnis von den Tetradenteilungen der Compositen. Svensk. Bot. Tids. 3; 64—77, Pl. I.
- ROSENBERG, O. 1909b. — Über die Chromosomenzahlen bei *Taraxacum* und *Rosa*. Svensk. Bot. Tids. 3; 150—62.
- ROSENBERG, O. 1909c. — Über den Bau des Ruhekerns. Svensk. Bot. Tids. 3; 163—173, Pl. V.
- ROSENBERG, O. 1909d. — Cytologische und morphologische Studien an *Drosera longifolia* × *rotundifolia*. K. Svensk. Vet. Akad. Handl. N. S. 43; 1—65, Pl. I—IV.
- ROSENBERG, O. 1912. — Über die Apogamie bei *Chondrilla juncea*. Svensk. Bot. Tids. 6; 915—9.
- ROSENBERG, O. 1917. — Die Reduktionsteilung und ihre Degeneration in *Hieracium*. Svensk. Bot. Tids. 11; 145—206.
- ROSENBERG, O. 1918. — Chromosomenzahlen und Chromosomendimensionen in der Gattung *Crepis*. Arkiv. Bot. 15; 1—16.
- ROSENBERG, O. 1920. — Weitere Untersuchungen über die Chromosomenverhältnisse in *Crepis*. Svensk. Bot. Tids. 14; 319—26.
- ROSENBERG, O. 1926. — Zum Mechanismus der diploiden Kernteilung in Pollenmutterzellen. Arch. Bot. 20; B. 3, 1—5.
- ROSENBERG, O. 1927a. — Die semiheterotypische Teilung und ihre Bedeutung für die Entstehung Verdoppelter Chromosomenzahlen. Hereditas 8, 305—338.
- ROSENBERG, O. 1927b. — Homoeotypic division in uninucleate pollen-mother-cells: Hereditas 9; 285—8.
- ROTH, F. 1906. — Die Fortpflanzungsverhältnisse bei der Gattung *Rumex*. Diss. Bonn. Verh. Naturw. Vereins. Rheinl. Westfal. 63; 327—60.
- RUTTLE, M. L. 1927. — Chromosome number and morphology in *Nicotiana*. I. The somatic chromosomes and non-disjunction in *N. glauca* var. *grandiflora*. Univ. Calif. Pub. Bot. 11; 159—76.
- RUTTLE, M. L. 1928. — Chromosome number and morphology in *Nicotiana*. II. Diploidy and partial diploidy in root-tips of *Tabacum* haploids. Univ. Calif. Pub. Bot. 11; 213—32.
- RUYS, J. D. 1924. — On the formation of triad-groups of chromosomes in the divisions of the nuclei of the endosperm in *Mouriria anomala* PULLI. Proc. K. Akad. Wetensch. Amsterdam 27; 438—40.
- RUYS, J. D. 1925. — Contribution à l'histoire du développement des Melastomatacées. Ann. Jard. Bot. Buitenzorg 34; 65—80, Pl. I—III.
- RYBIN, V. A. 1926. — Cytological investigations of the genus *Malus*. (With English summary). Bull. Appl. Bot. Plant Breed. 16; 187—200, Pl. I, II.
- RYBIN, V. A. 1927a. — On the number of chromosomes observed in the somatic and reduction division of the cultivated apple in connection with pollen sterility of some of its varieties. Bull. Appl. Bot. Plant Breed. 17; 101—20, Pl. I—VI.
- RYBIN, V. A. 1927b. — Polyploid hybrids of *Nicotiana Tabacum* L. × *Nicotiana rustica* L. Bull. Appl. Bot. Plant Breed. 17; 191—240, Pl. I—VI.

- SAKAMURA, T. 1914. — Studien über die Kernteilung bei *Vicia Cracca* L. Bot. Mag. Tokyo 28; 131—47, Pl. II.
- SAKAMURA, T. 1915. — Über die Einschnürung der Chromosomen bei *Vicia Faba* L. Bot. Mag. Tokyo 29; 287—300, Pl. XIII.
- SAKAMURA, T. 1918. — Kurze Mitteilung über die Chromosomenzahlen und die Verwandtschafts-verhältnisse der *Triticum*-Arten. Bot. Mag. Tokyo 32; 151—4.
- SAKAMURA, T. 1920. — Experimentelle Studien über die Zell- und Kernteilung mit besonderer Rücksicht auf Form, Grösse und Zahl der Chromosomen. Jour. Coll. Sci. Imp. Univ. Tokyo 39; 11, 1—219, Pl. I—VII.
- SAKAMURA, T. & I. STOW. 1926—7. — Über die experimentell veranlasste Entstehung von keimfähigen Pollenkörnern mit abweichenden Chromosomenzahlen. Jap. Jour. Bot. 3; 111—38, Pl. III.
- SALAMAN, R. N. 1928. — Abnormal segregation in the families arising from the cross *Solanum utile* × *Solanum tuberosum*. Verh. V. Inter. Kongr. Vererb. wiss. Berlin; 1230—9.
- SAMUELS, J. A. 1912. — Études sur le développement du sac embryonnaire et sur la fécondation du *Gunnera macrophylla* BL. Archiv. Zellforsch. 8; 52—120, Pl. III—V.
- SAMUELSSON, G. 1913. — Studien über die Entwicklungsgeschichte der Blüten einiger Bicornes typen. Svensk. Bot. Tids. 7; 97—188.
- SAMUELSSON, G. 1914. — Über die Pollenentwicklung von *Anona* und *Aristolochia* und ihre systematische Bedeutung. Svensk. Bot. Tids. 8; 181—9.
- SANTOS, J. K. 1924. — Determination of sex in *Elodea*. Bot. Gaz. 75; 42—59, Pl. III.
- SANTOS, J. K. 1928. — A cytological study of *Cocos nucifera* LINNAEUS. Philipp. Jour. Sci. 37; 417—37, Pl. I—VII.
- SAPÉHIN, A. A. 1927. — Sur la cytologie des hybrides entre variétés. Mélanges Botaniques offerts à M. L. Borodine, 1847—1927; 433—8.
- SAPÉHIN, A. A. 1928. — Hylogenetic investigations of the *vulgare* group in *Triticum*. Bull. Appl. Bot. Genet. Plant Breed. 19; 127—66.
- SAPÉHIN, A. A. & L. A. SAPÉHIN. 1928. — Hylogenetische Untersuchungen an Weizen. Verh. V. Inter. Kongr. Vererb. Wiss. Berlin; 1254—62.
- SARGANT, E. 1896. — The formation of sexual nuclei in *Lilium Martagon*. I. Oogenesis. Ann. Bot. 10; 445—78, Pl. XXII, XXIII.
- SARGANT, E. 1897. — The formation of sexual nuclei in *Lilium Martagon*. II. Spermatogenesis. Ann. Bot. 11; 187—224, Pl. X, XI.
- SAUER, L. W. 1909. — Nuclear divisions in the pollen-mother-cells of *Conval-laria majalis* L. Ohio Nat. 9; 497—505, Pl. XXIV, XXV.
- SAULESCU, N. 1925. — Beitrag zur Chromosomensorte von *Antirrhinum majus*. Diss. Ldw. Hochschule. Berlin 1925.
- SAWYER, M. L. 1925. — Crossing *Iris pseudacorus* and *I. versicolor*. Bot. Gaz. 79; 60—72, Pl. V—X.
- SAX, K. 1918. — The behavior of the chromosomes in fertilization. Genetics 3; 309—27, Pl. I, II.
- SAX, K. 1921. — Chromosome relationships in wheat. Science 54; 413—5.

- SAX, K. 1922. — Sterility in wheat hybrids. II. Chromosome behavior in partially sterile hybrids. *Genetics* 7; 513—52, Pl. I—III.
- SAX, K. 1923. — The relation between chromosome number, morphological characters and rust resistance in segregates of partially sterile wheat hybrids. *Genetics* 8; 301—21.
- SAX, K. 1928. — Chromosome behavior in *Triticum* hybrids. *Verh. V. Inter. Kongr. Vererb. wiss. Berlin*; 1265—84.
- SAX, K. (1926) 1929. — The cytology of *Triticum* in relation to genetics. *Inter. Congr. Plant Sci. Ithaca I*; 345—50.
- SAX K. & GAINES, E. F. 1924. — A genetic and cytological study of certain hybrids of wheat species. *Jour. Agr. Res.* 28; 1017—32, Pl. I, II.
- SAX, K. & H. J. SAX. 1924. — Chromosome behavior in a genus cross. *Genetics* 9; 454—64, Pl. I, II.
- SAXTON, W. T. 1907. — On the development of the ovule and embryo-sac in *Cassia Tomentosa* LAMK. *Trans. South Africa Phil. Soc.* 18; 1—6, Pl. I, II.
- SAXTON, W. T. 1910. — The ovule of *Bruniaceae*. *Trans. Roy. Soc. South Africa* 2; 27—31.
- SCHADOWSKY, A. 1911. — Beiträge zur Embryologie der Gattung *Epirrhizanihes* BL. *Bio. Zeitschr. Moscow* 2; 28—54, Pl. I, II.
- SCHADOWSKY, A. 1927. — Recherches caryologiques sur la division des cellules-mères du pollen chez le *Tradescantia virginica*. *Bull. Soc. Nat. Moscow, N. S.* 36; 1—24.
- SCHAFFNER, J. H. 1897. — The division of the macrospore nucleus in *Lilium*. *Bot. Gaz.* 23; 430—52, Pl. XXXVII—XXXIX.
- SCHAFFNER, J. H. 1898. — Karyokinesis in the root tips of *Allium Ceba*. *Bot. Gaz.* 26; 225—38, Pl. XXI—XXII.
- SCHAFFNER, J. H. 1901. — A contribution to the life history and cytology of *Erythronium*. *Bot. Gaz.* 31; 369—87, Pl. IV—IX.
- SCHAFFNER, J. H. 1906. — Chromosome reduction in the microsporocytes of *Lilium tigrinum*. *Bot. Gaz.* 41; 183—91, Pl. XII, XIII.
- SCHAFFNER, J. H. 1909. — The reduction division in the microsporocytes of *Agave virginica*. *Bot. Gaz.* 47; 198—214, Pl. XII—XIV.
- SCHIEHMANN, E. 1928a. — Chromosomenzahlen in der Gattung *Aegilops*. (I. Mitteilung). *Ber. Deu. Bot. Ges.* 46; 324—8, Pl. VIII, IX.
- SCHIEHMANN, E. 1928b. — Zytologische und Pflanzen-geographische Beiträge zur Gattung *Aegilops*. (II. Mitteilung). *Ber. Deu. Bot. Ges.* 46; 1 Generalversammlungs Hft., 107—128, Pl. I—IV.
- SCHILLER, J. 1928. — Über den Verlauf der Kernteilung bei *Capparis* mit Dauerchromosomen. *Jahrb. wiss. Bot.* 69; 491—500.
- SCHMID, E. 1906. — Beiträge zur Entwicklungsgeschichte der *Scrophulariaceae*. *Beitr. Bot. Centralbl.* 20 Abt. I; 175—299, Pl. XI, XII.
- SCHMUCKER, T. 1925. — Beiträge zur Biologie und Physiologie von *Arum maculatum*. *Flora* 118; 460—75.
- SCHNARF, K. 1921. — Kleine Beiträge zur Entwicklungsgeschichte der Angiospermen. 1. *Gilia millefoliata* FRISCH. et MEY. *Oesterr. Bot. Zeitschr.* 70; 153—8, Pl. II.

- SCHNARF, K. 1923. — Kleine Beiträge zur Entwicklungsgeschichte der Angiospermen. IV. Über das Verhalten des Antherentapetums einiger Pflanzen. Oesterr. Bot. Zeitschr. 72; 242—5.
- SCHNEIDER, H. 1913. — Morphologische und entwicklungsgeschichtliche Untersuchungen an *Thelygonum Cynocrambe* L. Flora 106; 1—41.
- SCHNIEWIND-THIES, J. 1901. — Die Reduktion der Chromosomenzahl und die ihr folgenden Kernteilungen in den Embryosackmutterzellen der Angiospermen. Jena 1—34, Pl. I—V.
- SCHOCH, M. 1920. — Entwicklungsgeschichtlich-cytologische Untersuchungen über die Pollenbildung und Bestäubung bei einigen *Burmannia*-Arten. Diss. Zurich; 1—94, Pl. I—III.
- SCHÜRHOFF, P. 1919. — Über die Teilung des generativen Kernes vor der Keimung des Pollenkorns. Arch. Zellforsch. 15; 145—59, Pl. VI.
- SCHÜRHOFF, P. 1922. — Zur Polyembryonie von *Allium odorum*. Ber. Deu. Bot. Ges. 40; 374—81.
- SCHÜRHOFF, P. 1925a. — Zur Zytologie von *Saxifraga*. Jahr. wiss. Bot. 64; 443—9, Pl. I.
- SCHÜRHOFF, P. 1925b. — Zur Zytologie von *Melandryum*-Zwittern. Ber. Deu. Bot. Ges. 43; 450—4.
- SCHÜRHOFF, P. 1926. — Die Zytologie der Blütenpflanzen. Stuttgart, Verlag Ferdinand Enke; 1—792.
- SCHÜRHOFF, P. 1927. — Zytologische Untersuchungen über *Mentha*. Beitr. zur Biol. Pflanz. Cohn. 15; 129—46, Pl. III, IV.
- SCHUSTOW, L. v. 1913. — Ueber Kernteilungen in der Wurzelspitze von *Allium Cepa*. Anat. Anzeig. 43; 15—30.
- SCHWEMMLE, J. 1924a. — Zur Kenntnis der Reziproken Bastarde zwischen *Epilobium parviflorum* und *roseum*. Zeitschr. Indukt. Abst. Vererb. Lehre 34; 145—85.
- SCHWEMMLE, J. 1924b. — Vergleichend-zytologische Untersuchungen an Onagraceen. Ber. Deu. Bot. Ges. 42; 238—43, Pl. I.
- SCHWEMMLE, J. 1926. — Vergleichend-zytologische Untersuchungen an Onagraceen. II. Die Reduktionsteilung von *Eucharidium concinnum*. Jahr. wiss. Bot. 65; 778—818, Pl. III—X.
- SCHWEMMLE, J. 1927. — Der Bastard *Berteriana* × *Onagra (muricata)* und seine Zytologie. Jahr. wiss. Bot. 66; 579—95, Pl. XI.
- SCHWEMMLE, J. 1928. — Genetische und zytologische Untersuchungen an Eunothenen. Jahr. wiss. Bot. 67; 849—76, Pl. II, III.
- SCHWESCHNIKOWA, I. N. 1927. — Karyological studies on *Vicia*. Bull. Appl. Bot. Genet. Plant Breed. 17; 37—72.
- SCHWESCHNIKOWA, I. N. 1928. — Die Genese des Kernes im Genus *Vicia*. Verh. V. Internat. Kongr. Vererbungswiss. Berlin; 1415—21, Pl. XIV.
- SEELIEB, W. 1924. — Beiträge zur Entwicklungsgeschichte von *Tofieldia calyculata* (L.) WAHLENB. Bot. Not. Lund; 172—8.
- SENJANINOVA, M. (1924) 1925. — Étude embryologique de *l'Orphrys myodes*. (With French summary). Jour. Soc. Bot. 9; 10—14.
- SENJANINOVA, M. 1926. — Das Verhalten des Nucleolus und der Trabanten

- während der somatischen Mitosen und den Reifeteilungen bei *Ranunculus acer* L. Zeitschr. Zellforsch. Mikros. Anat. 3; 417—30.
- SENJANINOVA, M. 1927. — Beitrag zur vergleichend karyologischen Untersuchung des Linneons *Valeriana officinalis* L. Zeitschr. Zellforsch. Mikros. Anat. 5; 675—9.
- SERGUÉEF, M. 1907. — Contribution à la morphologie et la biologie des Apogonacees. Thesis, Geneva; 1—132, Pl. I—III.
- SHARP, L. 1914. — Maturation in *Vicia*. Bot. Gaz. 57; 531.
- SHEFFIELD, F. M. L. 1927. — Cytological studies of certain meiotic stages in *Oenothera*. Ann. Bot. 41; 779—816, Pl. XXXIV—XXXVI.
- SHIBATA, K. & K. MIYAKE. 1908. — Ueber Parthenogenesis bei *Houttuynia cordata*. Bot. Mag. Tokyo 22; 141—4, Pl. VI.
- SHIMOTOMAI, N. 1925. — A karyological study of *Brassica* L. Bot. Mag. Tokyo 39; 122—7.
- SHIMOTOMAI, N. 1927. — Über Störungen der meiotischen Teilungen durch niedrige Temperatur. Bot. Mag. Tokyo 41; 149—60.
- SHOEMAKER, J. S. 1926. — Pollen development in the apple, with special reference to chromosome behavior. Bot. Gaz. 81; 148—172, Pl. XII—XIV.
- SHREVE, F. 1906. — The development and anatomy of *Sarracenia purpurea*. Bot. Gaz. 42; 107—26, Pl. III—V.
- SHULL, G. H. 1928. — *Oenothera* cytology in relation to genetics. Amer. Nat. 62; 97—114.
- SIMONET, M. 1928a. — Le nombre des chromosomes dans le genre des Iris. C. R. Soc. Biol. Paris 99; 1314—6.
- SIMONET, M. 1928b. — Le nombre des chromosomes chez les Iris des Jardins (*Iris germanica* HORT.) C. R. Acad. Sci. Paris 187; 840—1.
- SIMONET, M. 1928c. — Contribution à l'étude des chromosomes chez le genre *Iris*. C. R. Soc. Biol. Paris 99; 1928—30.
- SINOTO, Y. 1922. — On the nuclear divisions and partial sterility in *Oenothera Lamarckiana*. Ser. Bot. Mag. Tokyo 36; 92—8.
- SINOTO, Y. 1924. — On chromosome behavior and sex determination in *Rumex acetosa* L. Bot. Mag. Tokyo 38; 153—61.
- SINOTO, Y. 1925. — Notes on the histology of a giant and an ordinary form of *Plantago*. Bot. Mag. Tokyo 39; 159—166.
- SINOTO, Y. 1927. — Microsporogenesis in *Oenothera sinuata* L. Bot. Mag. Tokyo 41; 225—34, Pl. VII.
- SINOTO, Y. 1928a. — On the chromosome number and the unequal pair of chromosomes in some dioecious plants. Proc. Imp. Acad. Tokyo 42; 175—7.
- SINOTO, Y. 1928b. — Pollen development of *Jussieuia repens* L. Proc. Imp. Acad. Tokyo 42; 231.
- SINOTO, Y. & K. KIVOHARA. 1928. — A preliminary note on the chromosomes of *Hydrilla verticillata* PRESL. Bot. Mag. Tokyo 42; 82—5.
- SKALIŃSKA, M. 1928. — Études sur la stérilité partielle des hybrides du genre *Aquilegia*. Verh. V. Internat. Kongr. Vererbungswiss. Berlin; 1343—72.
- SKALIŃSKA, M. & S. CUCHTMAN. 1926. — Karyologische Analyse einer poly-

- morphen Rasse von *Petunia violacea* LINDL. Bibl. Univ. liberae Polonae Varsoviae 19; 1—22.
- SMET, E. DE. 1914. — Chromosomes, prochromosomes et nucleole dans quelques Dicotylées. La Cellule 29; 335—78, Pl. I—IV.
- SMIRNOV, P. A. 1927. — Seltene und kritische Pflanzen des Gouv. Moskau, Arbeiten d. Museums d. zentral industriellen Gebiete Liefg. 4.
- SMITH, H. B. 1927. — Chromosome counts in the varieties of *Solanum tuberosum* and allied wild species. Genetics 12; 84—92, Pl. I.
- SMITH, R. W. 1898. — A contribution to the life history of the *Pontederiaceae*. Bot. Gaz. 25; 324—7, Pl. XX.
- SMITH, R. W. 1911. — The tetranucleate embryosac of *Clintonia*. Bot. Gaz. 52; 209—17, Pl. V.
- SOBOLEWSKA, H. 1926. — Cinèse somatique et cinèse de maturation dans les Eleagnacées. Acta Soc. Bot. Pol. 4; 64—76, Pl. VII—IX.
- SÖDERBERG, E. 1919. — Über die Pollenentwicklung bei *Chamaedorea coralina* KARST. Svensk. Bot. Tids. 13; 204—11.
- SÖDERBERG, E. 1927. — Über die Chromosomenzahl von *Houttuynia cordata*. Svensk. Bot. Tids. 21; 247—250.
- SOROKIN, H. 1924. — The satellites of the somatic mitoses in *Ranunculus acris* L. Pub. Faculté Sci. Univ. Charles 13; 1—15, Pl. I, II.
- SOROKIN, H. 1927a. — A study of meiosis in *Ranunculus acris*. Amer. Jour. Bot. 16; 76—84. Pl. XIV, XV.
- SOROKIN, H. 1927b. — Cytological and morphological investigations of gynodimorphic and normal forms of *Ranunculus acris* L. Genetics 12; 59—83.
- SOROKIN, H. 1927c. — Variation in homoeotypic division in *Ranunculus acris*. Amer. Jour. Bot. 14; 565—81, Pl. LXIX—LXX.
- SOROKIN, H. 1927d. — The chromosomes of *Ranunculus acris*. Amer. Nat. 61; 571—4.
- SOROKINA, O. N. 1928. — On the chromosomes of *Aegilops* species. Bull. Appl. Bot. Plant Breed. 19; 523—32.
- SOUÈGES, M. R. 1913. — Recherches sur l'embryogenie des Ranunculacées. Bull. Soc. Bot. France 60; 150—7, Pl. II.
- SPRUMONT, G. 1928. — Chromosomes et satellites dans quelques espèces d'*Ornithogalum*. La Cellule 38; 269—92, Pl. I, II.
- STANTON, T. R. & E. DORSEY. 1927. — Morphological and cytological studies of an oat from Ethiopia. Jour. Amer. Soc. Agr. 19; 804—18.
- STEIN, E. 1926. — Untersuchungen über die Radiomorphosen von *Antirrhinum*. Zeitschr. Indukt. Abst. Vererb. Lehre 43; 1—86, Pl. I—IV.
- STEIN, E. 1926. — Über Experimentelle Umstimmung der Reaktionsnorm bei *Antirrhinum* (Radiomorphose). Biol. Zentralbl. 47; 705—22.
- STENAR, H. 1927a. — Zur Entwicklungsgeschichte der Gattung *Anigosanthus* LABILL. Bot. Not. Lund; 104—14.
- STENAR, H. 1927b. — Über die Entwicklung des siebenkernigen Embryosackes bei *Gagea lutea*. Ker. Svensk. Bot. Tids. 21; 344—60.
- STENAR, H. 1928. — Zur Embryologie der *Veratrum* und *Anthericum* Gruppen. Bot. Not. Lund 5—6; 357—78.

- STEPHENS, E. L. 1909. — The embryosac and embryo of certain *Penaeaceae*. Ann. Bot. 23; 363—78, Pl. XXV—XXVI.
- STEVENS, N. E. 1912. — Observations on heterostylous plants. Bot. Gaz. 53; 277—308, Pl. XXI—XXIII.
- STOLT, K. A. N. 1921. — Zur Embryologie der Gentianaceen und Menyanthaceen. K. Svensk. Vet. Akad. Hand. 61; 141—56.
- STOLZE, K. V. 1925. — Die Chromosomenzahlen der hauptsächlichsten Getreidearten nebst allgemeinen Betrachtungen über Chromosomen, Chromosomenzahl und Chromosomengrösse im Pflanzenreich. Bibliotheca Genetica 8; 1—71.
- STOMPS, T. 1912a. — Die Entstehung von *Oenothera gigas* DE VRIES. Ber. Deu. Bot. Ges. 30; 406—16.
- STOMPS, T. 1912b. — Mutation bei *Oenothera biennis* L. Biol. Zentralbl. 32; 521—35, Pl. I.
- STOMPS, T. 1916. — Über den Zusammenhang zwischen Statur and Chromosomenzahl bei den Oenotheren. Biol. Zentralbl. 36; 129—60.
- STOMPS, T. 1919. — *Gigas* Mutation mit und ohne Verdoppelung der Chromosomenzahl. Zeitschr. Indukt. Abst. Vererb. Lehre 21; 65—90, Pl. I—III.
- STOMPS, T. 1925. — Sur *Oenothera Biennis* mut. *Gigas* une nouvelle mutation tetraploide. La Cellule 36; 233—54.
- STOMPS, T. 1928. — Über die Mutationserscheinungen der *Oenothera biennis* L. Verh. V. Internat. Kongr. Vererbungs Wiss. Berlin; 1405—14.
- STORK, H. E., 1920. — Studies in the genus *Taraxacum*. Bull. Torr. Bot. Club 47; 199—120, Pl. VI, VII.
- STOUT, A. B. 1913. — The individuality of the chromosomes and their serial arrangement in *Carex aquatilis*. Arch. Zellforsch. 9; 114—40, Pl. XI, XII.
- STOW, L. 1926. — A cytological study on the pollen sterility in *Solanum tuberosum* L. Proc. Imp. Acad. Tokyo 2; 426—30.
- STOW, L. 1926—7. — A cytological study on pollen sterility in *Solanum tuberosum* L. Jap. Jour. Bot. 3; 217—38, Pl. IX.
- STRASBURGER, E. 1882. — Über den Teilungsvorgang der Zellkerne und das Verhältnis der Kernteilung zur Zellteilung. Arch. Mikrosk. Anat. 21; 476—590 Pl. XXV—XXVII.
- STRASBURGER, E. 1888. — Über Kern- und Zellteilung im Pflanzenreiche nebst einem Anhang über Befruchtung. Hist. Beitr. 1; 1—258, Pl. I—III.
- STRASBURGER, E. 1893. — Zu dem jetzigen Stande der Kern- und Zellteilungsfragen. Anat. Anzeig. 8; 177—91.
- STRASBURGER, E. 1900. — Über Reduktionsteilung, Spindelbindung, Centrosomen und Cilienbilder in Pflanzenreich. Hist. Beitr. 6; 1—224, Pl. I—IV.
- STRASBURGER, E. 1902. — Ein Beitrag zur Kenntniss von *Ceratophyllum submersum*. Jahr. wiss. Bot. 37; 477—526, Pl. IX—XI.
- STRASBURGER, E. 1904a. — Die Apogamie der Eu-Alchimillen und allgemeine Gesichtspunkte die sich aus ihr ergeben. Jahrb. wiss. Bot. 41; 88—164, Pl. I—IV.

- STRASBURGER, E. 1904b. — Über Reduktionsteilung. Sitz. Ber. K. Akad. wiss. Berlin 1; 587—615.
- STRASBURGER, E. 1905a. — Die Samenanlage von *Drymis Winteri* und die Endospermibildung bei Angiospermen. Flora 95; 215—31, Pl. VII, VIII.
- STRASBURGER, E. 1905b. — Typische und allotypische Kernteilung. Jahrb. wiss. Bot. 42; 1—71, Pl. I.
- STRASBURGER, E. 1907. — Über die Individualität der Chromosomen und die Propfhybriden-Frage. Jahrb. wiss. Bot. 44; 482—555, Pl. V—VII.
- STRASBURGER, E. — 1908. Chromosomenzahlen, Plasmastrukturen, Vererbungsträger und Reduktionsteilung. Jahrb. wiss. Bot. 45; 479—570, Pl. I—III.
- STRASBURGER, E. 1909a. — Zeitpunkt der Bestimmung des Geschlechts, Apogamie, Parthenogenesis und Reduktionsteilung. Hist. Beitr. 7; 1—124; Pl. I—III.
- STRASBURGER, E. 1909b. — Das weitere Schicksal meiner isolierten weiblichen *Mercurialis annua* Pflanzen. Zeitschr. Bot. 47; 245—88.
- STRASBURGER, E. 1910a. — Chromosomenzahl. Flora 100; 398—446, Pl. VI.
- STRASBURGER, E. 1910b. — Sexuelle und apogame Fortpflanzung bei Urticeen. Jahrb. wiss. Bot. 47; 245—88.
- STRASBURGER, E. 1910c. — Über geschlechtbestimmende Ursachen. Jahrb. wiss. Bot. 48; 427—520, Pl. IX, X.
- STRASBURGER, E. 1910d. — Die Chromosomenzahlen der *Wikstroemia indica* (L.) C. A. MEY. Ann. Jard. Bot. Buitenzorg Supp. 3; 13—18.
- STRASBURGER, E. 1911. — Kernteilungsbilder bei der Erbse. Flora 102; 1—23, Pl. I.
- SUESSENGUTH, K. 1921. — Bemerkungen zur meiotischen und somatischen Kernteilung bei einigen Monokotylen. Flora 114; 313—28.
- SUGIURA, T. 1925a. — Meiosis in *Tropaeolum majus* L. Bot. Mag. Tokyo 39; 47—54, Pl. I.
- SUGIURA, T. 1925b. — On the meiotic division of pollen-mother-cells of *Polygonum savatieri* NAKAI. Bot. Mag. Tokyo 39; 291—5.
- SUGIURA, T. 1927. — Some observations on the meiosis of the pollen-mother-cells of *Carica papaya*, *Myrica rubra*, *Aucuba japonica* and *Beta vulgaris*. Bot. Mag. Tokyo 41; 219—24, Pl. VI.
- SUGIURA, T. 1928a. — Chromosome numbers in some higher plants I. Bot. Mag. Tokyo 42; 504—6.
- SUGIURA, T. 1928b. — Cytological studies on *Tropaeolum*. II. *Tropaeolum peregrinum*. Bot. Mag. Tokyo 42; 553—6.
- SUESSENGUTH, K. 1920. — Beiträge zur Frage des systematischen Anschlusses der Monokotylen. Beih. Bot. Centralbl. 38, Abt. II; 1—79.
- SUESSENGUTH, K. 1921. — Bemerkungen zur meiotischen und somatischen Kernteilung bei einigen Monokotylen. Flora 114; 313—28.
- SUESSENGUTH, K. 1923. — Über die Pseudogamie bei *Zygopetalum Mackayi* Hook. Ber. Deu. Bot. Ges. 41; 16—23.
- SVENSSON, H. G. 1926. — Zytologische embryologische Solanazeenstudien. Svensk Bot. Tids. 20; 420—33.

- SVENSSON, H. G. 1928. — Zur Entwicklungsgeschichte der Blüten und Samen von *Limosella aquatica* L. Svensk Bot. Tids. 22; 465—76.
- SVENSSON-STENAR, A. H. 1925. — Embryologische Studien. I. Zur Embryologie einiger Columniferen. II. Die Embryologie der Amaryllideen. Akad. Abhand. Uppsala; 1—195, Pl. I.
- SYKES, M. G. 1908a. — Nuclear division in *Funkia*. Archiv. Zellforsch. 1; 381—98, Pl. VIII, IX.
- SYKES, M. G. 1908b. — Note on the number of the somatic chromosomes in *Funkia*. Archiv. Zellforsch. 1; 525—7, Pl. XVI.
- SYMONS, F. L. 1926. — Studies in the genus *Xanthium*. Bot. Gaz. 81; 121—46, Pl. IX—XI.
- TÄCKHOLM, G. 1920. — On the cytology of the genus *Rosa*. Svensk Bot. Tids. 14; 301—11.
- TÄCKHOLM, G. 1922. — Zytologische Studien über die Gattung *Rosa*. Acta Horti Bergiani 7; 97—381.
- TÄCKHOLM, G. & E. SÖDERBERG. 1917. — Über die Pollenentwicklung bei *Cinnamomum* nebst Erörterungen über die Phylogenetische Bedeutung des Pollentypus. Arch. Bot. 15; 8, 1—14.
- TÄCKHOLM, G. & E. SÖDERBERG. 1918. — Neue Beispiele der simultanen und sukzessiven Wandbildung in den Pollenmutterzellen. Svensk Bot. Tids. 12; 189—201.
- TAHARA, M. 1910. — Über die Kernteilung bei *Morus*. Bot. Mag. Tokyo 44; 281—9.
- TAHARA, M. 1914a. — Cytological studies on *Chrysanthemum*. Bot. Mag. Tokyo 28; 489—94.
- TAHARA, M. 1914b. — The chromosome number of Shasta Daisy. Bot. Mag. Tokyo 28; 515—6.
- TAHARA, M. 1915a. — Cytological investigation on the root-tips of *Helianthus annuus* with special reference to the behavior of the nucleolus. Bot. Mag. Tokyo 29; 1—5.
- TAHARA, M. 1915b. — Cytological studies on *Chrysanthemum* II. Bot. Mag. Tokyo 29; 5—17.
- TAHARA, M. 1915c. — Cytological studies on *Chrysanthemum* (A preliminary note). Bot. Mag. Tokyo 29; 48—50.
- TAHARA, M. 1915d. — Parthenogenesis in *Erigeron annuus*. PERS. Bot. Mag. Tokyo 29; (245—54).
- TAHARA, M. 1915e. — The chromosomes of *Papaver*. Bot. Mag. Tokyo 29; 254—6.
- TAHARA, M. 1921. — Cytologische Studien an einigen Kompositen. Jour. Coll. Sci. Imp. Univ. Tokyo 43; 7, 1—54, Pl. I—IV.
- TAHARA, M. & N. SHIMOTOMAI 1926. — Chromosompolyploidie bei *Aster* und dessen verwandten Gattungen. Bot. Mag. Tokyo 40; 132—6.
- TAHARA, M. & N. SHIMOTOMAI. 1927. — Bastardierung als eine Ursache für die Entstehung der Chromosomenpolyploidie. Sc. Reports Tôhoku Imp. Univ. Ser. IV, 2; 233—9.
- TAKAGI, F. 1928a. — The influence of the higher temperature on the reduction

- division of the pollen-mother-cells of *Lychnus Sieboldii* VAN HOUTTE. Scient. Reports. Tôhoku, Imp. Univ. Ser. IV, 3; 461—6, Pl. XXII.
- TAKAGI, F., 1928b. — On the chromosome numbers of *Pelargonium*. Scient. Reports Tôhoku, Imp. Univ. Ser. IV, 3; 665—71.
- TAKAMINE, N. 1916. — Über die ruhenden und die präsynaptischen Phasen der Reduktionsteilung. Bot. Mag. Tokyo 30; 293—303.
- TAKAMINE, N. 1923. — On the effect of ultra-violet rays upon nuclear divisions of plants. Bot. Mag. Tokyo 37; 109—12, Pl. V.
- TAKAMINE, N. 1927. — Some observations on the chromosomes of *Najas major*. ALL. Bot. Mag. Tokyo 41; 118—22, Pl. III.
- TAMMES, T. 1922. — Genetic analysis, schemes of co-operation and multiple allelomorphs of *Linum usitatissimum*. Jour. Genetics 12; 19—46.
- TAMMES, T. 1923. — Das genotypische Verhältnis zwischen dem wilden *Linum angustifolium* und dem Kulturlein, *Linum usitatissimum*. Genetica 5; 61—76, Pl. I.
- TANJI, S. 1925. — Chromosome numbers of wild barley. Bot. Mag. Tokyo 39, 55—7.
- TAYLOR, W. E. 1920. — A morphological and cytological study of reproduction in the genus *Acer*. Contr. Bot. Lab. Univ. Penn. 5; 111—38, Pl. VI—XII.
- TAYLOR, W. R. 1924. — Cytological studies on *Gasteria* I. Chromosome shape and individuality. Amer. Jour. Bot. 11; 51—9.
- TAYLOR, W. R. 1925a. — The chromosome morphology of *Veltheimia*, *Allium* and *Cyrtanthus*. Amer. Jour. Bot. 12; 104—15.
- TAYLOR, W. R. 1925b. — Cytological studies on *Gasteria*. II. A comparison of the chromosomes of *Gasteria*, *Aloe*, and *Haworthia*. Amer. Jour. Bot. 12; 219—23.
- TAYLOR, W. R. 1925c. — Chromosome constrictions as distinguishing characteristics in plants. Amer. Jour. Bot. 12; 238—44, Pl. XXII.
- TAYLOR, W. R. 1926. — Chromosome morphology in *Fritillaria*, *Alstroemeria*, *Silphium* and other genera. Amer. Jour. Bot. 13; 179—93.
- TERASAWA, Y. & N. SHIMOTOMAI. 1928k. — Bastardierungsversuche bei *Brassica* und *Raphanus*. Scient. Reports Tôhoku Imp. Univ. Sec. 111; 4, 827—41, Pl. XXXV, XXXVI.
- TERBY, J. 1922. — La constance du nombre des chromosomes et de leurs dimensions dans le *Butomus umbellatus*. La Cellule 32; 197—226, Pl. I, II.
- THOMPSON, W. P. 1922. — Lethal factors in cereals. Proc. West. Can. Soc. Agr. 3; 53—9.
- THOMPSON, W. P. 1925. — The correlation of characters in hybrids of *Triticum durum* and *Triticum vulgare*. Genetics 10; 285—304.
- THOMPSON, W. P. 1926a. — Chromosome behavior in a cross between wheat and rye. Genetics 11; 317—32.
- THOMPSON, W. P. 1926b¹⁾. — Chromosome behavior in triploid wheat hybrids. Jour. Genetics 17; 43—8.

¹⁾ This paper was published in Journal No. 1 of volume 17 in 1926, but the title page of Vol. 17 gives the date 1927.

- THOMPSON, W. P. 1927. — Characters of common wheats in plants with fourteen chromosomes. Trans. Roy. Soc. Can. Sec. 111, 21; 273—7.
- THOMPSON, W. P. 1928. — The genetics and cytology of a dwarf wheat. Trans. Roy. Soc. Can. Sect. V, 22; 335—49.
- THOMPSON, W. P. & D. R. CAMERON. 1928. — Chromosome numbers in functioning germ cells of species-hybrids in wheat. Genetics 13; 456—69.
- THOMPSON, W. P. & L. HOLLINGSHEAD. 1927. — Preponderance of *Dicoccum*-like characters and chromosome numbers in hybrids between *Triticum dicoccum* and *Triticum vulgare*. Jour. Genetics 17; 283—307.
- TIMM, H. 1928. — Untersuchungen über die Sterilitätsursachen von *Homocallis Fulva* und *Citrulina*. Planta 5; 784—808.
- TISCHLER, G. 1906. — Über die Entwicklung des Pollens und der Tapetenzellen bei *Ribes* Hybriden. Jahrb. wiss. Bot. 42; 545—78, Pl. XV.
- TISCHLER, G. 1908. — Zellstudien an sterilen Bastardpflanzen. Archiv. Zellforsch. 1; 33—151.
- TISCHLER, G. 1910. — Untersuchungen über die Entwicklung des Bananen-Pollens. I. Arch. Zellforsch. 5; 622—70, Pl. XXX, XXXI.
- TISCHLER, G. 1915. — Chromosomenzahl, -Form und -Individualität im Pflanzenreiche. Prog. Rei Bot. 5; 164—284.
- TISCHLER, G. 1917. — Über die Entwicklung und phylogenetische Bedeutung des Embryosacks von *Lythrum salicaria*. Ber. Deu. Bot. Ges. 35; 233—46, Pl. IV.
- TISCHLER, G. 1918a. — Untersuchungen über den anatomischen Bau der Staub- und Fruchtblätter bei *Lythrum salicaria* mit Beziehung auf das Illegitimitätsproblem. Flora 111—112; 162—93, Pl. III.
- TISCHLER, G. 1918b. — Untersuchungen über den Riesenwuchs von *Phragmites communis* var. *Pseudodonax*. Ber. Deu. Bot. Ges. 36; 549—58, Pl. XVII.
- TISCHLER, G. 1920. — Über die sogenannten „Erbsubstanzen“ und ihre Lokalisation in der Pflanzenzelle. Biol. Zentralbl. 40; 15—28.
- TISCHLER, G. 1921—22. — Die Chromosomen und ihre Bedeutung für Stammes- und Erblichkeitsforschung. Handbuch der Pflanzenanatomie. Lindbauer 2; 1. 1.
- TISCHLER, G. 1927a. — Pflanzliche Chromosomen. Zahlen Tabulae Biologicae IV, Berlin.
- TISCHLER, G. 1927b. — Chromosomenstudien bei *Ribes Gordonianum* und seinen Eltern. Planta 4; 617—50.
- TISCHLER, G. 1928a. — Über eigenartige Chromosomenbindung bei *Ribes Gordonianum* (*R. sanguineum* × *R. aureum*). Verh. V. Internat. Kongr. Vererb. Wiss. Berlin; 1487—94.
- TISCHLER, G. 1928b. — Über die Verwendung der Chromosomenzahl für Phylogenetische Probleme bei den Angiospermen. Biol. Zentralbl. 48; 321—45.
- TISCHLER, G. (1926) 1929. — Untersuchungen über die Cytologie pflanzlicher Species-Bastarde mit gleichen Chromosomenzahlen der Eltern. Proc. Internat. Congr. Plant. Sci. Ithaca, 1; 821—30.
- TJEBBES, K. 1927. — The chromosomes of three *Delphinium* species. Hereditas 10; 160—4.

- TJEBBES, K. 1928. — The chromosome numbers of some flowering plants. *Hereditas* 10; 328—32.
- TOCHINAI, Y. & H. KIHARA. 1927. — Studies on the correlations between morphological characters, chromosome-number and resistance to *Puccinia triticea* in pentaploid-bastards of wheat. *Jour. Coll. Agr. Hokkaido Imp. Univ. Sapporo* 17; 133—61.
- TOKUGAWA, Y. & Y. KUWADA. 1924. — Cytological studies on some garden varieties of *Canna*. *Jap. Jour. Bot. Trans. Abst.* 2; 157—73, Pl. I.
- TOLEDO PIZA, S. DE. 1928. — Historia dos cromosmos na mitose somatica do alho. *Rev. de Agr. (Picaricaba)* 3; 9—10, 17—20, Pl. I.
- TOURNOIS, J. 1914. — Études sur la sexualité du Houblon. *Ann. Sci. Nat.* IX Bot. 19; 49—129, Pl. VI—X.
- TREUL, M. 1911. — Le sac embryonnaire et l'embryon dans les angiospermes. *Ann. Jard. Bot. Buitenzorg* 24; 1—17, Pl. I—V.
- TSCHERMAK, E. & H. BLEIER. 1926. — Über fruchtbare *Aegilops*-Weizen Bastarde. *Ber. Deu. Bot. Ges.* 44; 110—32.
- TSCHERNOYAROW, M. 1914. — Über die Chromosomenzahl und besonders beschaffene Chromosomen im Zellkerne von *Najas major*. *Ber. Deu. Bot. Ges.* 32; 411—6, Pl. X.
- TSCHERNOYAROW, M. 1927. — Nouveaux faits dans la réduction chromatique chez le *Najas major* ALL. et leur signification pour les théories chromosomiques de l'hérédité. *Bull. Gard. Bot. Kieff* 5—6; 107—47, Pl. I, II.
- UBISCH, G. v. 1921. — Beitrag zu einer Faktorenanalyse von Gerste. *Zeitschr. Indukt. Abst. Vererb. Lehre* 25; 198—210.
- UFER, M. 1927. — Vergleichende Untersuchungen über *Cleome spinosa*, *Cleome gigantea* und ihre Gigas-Formen. *Diss. Hamburg*, 1—57.
- UMIKER, O. 1920. — Entwicklungsgeschichtlich-cytologische Untersuchungen an *Helosis guyanensis* RICH. *Diss. Zurich*; 1—54.
- VALCANOVER, R. 1926. — Contribution à l'étude de la réduction dans *Oenothera biennis*. *La Cellule* 37; 201—28, Pl. I—III.
- VALLEAU, W. D. 1918. — Sterility in the strawberry. *Jour. Agr. Res.* 12; 613—70, Pl. D. E. XXXV, XXXVI.
- VAVILOV, N. J. & O. V. JAKUSHKINA. 1925. — A contribution to the phylogenesis of wheat and the inter-species hybridisation in wheats. *Bull. Appl. Bot. Plant Breed.* 15; 3—159.
- VELSER, J. 1913. — Zur Entwicklungsgeschichte von *Akebia quinata* DEC. *Diss. Bonn*; 1—26.
- VILCINS, M. & K. ABELE. 1927. — On the development of pollen and embryo-sac of *Papaver Rhoeas* L. *Acta. Hort. Bot. Latv. (Riga)* 2; 125—32.
- VILMORIN, R. DE. & M. SIMONET. 1927a. — Variations du nombre des chromosomes chez quelques Solanées. *C. R. Acad. Sci. Paris*, 184; 164—6.
- VILMORIN, R. DE. & M. SIMONET. 1927b. — Nombre des chromosomes dans les genres *Lobelia*, *Linum* et chez quelques autres espèces végétales. *C. R. Soc. Biol. Paris* 96; 166—8.
- VILMORIN, R. DE. & M. SIMONET. 1928. — Recherches sur le nombre des chro-

- mosomes chez les Solanées. Verh. V. Internat. Kongr. Vererb. Wiss. Berlin; 1520—36.
- VOKOLEK, H. 1925. — Über Riesenwuchs bei einigen Formen der Gattung *Primula*. Zeitschr. Indukt. Abst. Vererb. Lehre 40; 42—82, Pl. II, III.
- VRIES, H. DE. 1915. — The coefficient of mutation in *Oenothera biennis*. Bot. Gaz. 59; 169—96.
- VRIES, H. DE. 1918a. — Phylogenetische und gruppenweise Artbildung. Flora 111—112; 208—26.
- VRIES, H. DE. 1918b. — Mutations of *Oenothera suaveolens* DESF. Genetics 3; 1—26.
- VRIES, H. DE. 1918c. — Mass mutations and twin hybrids of *Oenothera grandiflora* AIT. Bot. Gaz. 65; 377—422.
- VRIES, H. DE. 1923. — Über die Mutabilität von *Oenothera Lamarckiana* mut. *simplex*. Zeitschr. Indukt. Abst. Vererb. Lehre 31; 313—51, Pl. IV.
- VRIES, H. DE. 1925a. — Die latente Mutabilität von *Oenothera biennis* L. Zeitschr. Indukt. Abst. Vererb. Lehre. 83; 141—99.
- VRIES, H. DE. 1925b. — Mutant races derived from *Oenothera Lamarckiana semigigas*. Genetics 10; 211—22.
- VRIES, H. DE. & K. BOEDIJN. 1923. — On the distribution of mutant characters among the chromosomes of *Oenothera Lamarckiana*. Genetics 8; 233—8.
- VRIES, H. DE. & K. BOEDIJN. 1924a. — Doubled chromosomes of *Oenothera Lamarckiana semigigas*. Bot. Gaz. 78; 249—70.
- VRIES, H. DE. & K. BOEDIJN. 1924b. — Die Gruppierung der Mutanten von *Oenothera Lamarckiana*. Ber. Deu. Bot. Ges. 42; 174—8.
- VRIES, H. DE. & R. R. GATES. 1928. — A survey of the cultures of *Oenothera Lamarckiana* at Lunteren. Zeitschr. Indukt. Abst. Vererb. Lehre 47; 275—86.
- VUCKOVIČ, R. 1928. — Le noyau et la caryocinèse dans le *Carex*. La Cellule 18; 199—212.
- WARREN, E. 1924. — On an interspecific hybrid of *Digitalis*. Biometrika 16; 205—38, Pl. I—VI.
- WATKINS, A. E. 1924. — Genetic and cytological studies in wheat. I. Genetics 14; 129—71.
- WATKINS, A. E. 1925. — Genetic and cytological studies in wheat. II. Genetics 15; 323—66.
- WATKINS, A. E. 1927a. — Genetic and cytological studies in wheat. III. Genetics 18; 375—96, Pl. XXIII.
- WATKINS, A. E. 1927b. — Genetic and cytological studies in wheat. IV. Genetics 19; 81—96, Pl. II.
- WATKINS, A. E. 1928. — The genetics of wheat species-crosses. I. Genetics 20; 1—27, Pl. I.
- WEFELSCHIED, G. 1911. — Über die Entwicklung der generativen Zelle im Pollenkorn der dikotylen Angiospermen. Diss. Bonn; 1—50.
- WEINDEL-LIEBAU, F. 1928. — Zytologische Untersuchungen an *Artemisia*-Arten. Jahrb. wiss. Bot. 69; 636—86.

- WEINSTEIN, A. J. 1926. — Cytological studies on *Phaseolus vulgaris*. Amer. Jour. Bot. 13; 248—63, Pl. XVI—XIX.
- WEINZIEHER, S. 1914. — Beiträge zur Entwicklungsgeschichte von *Xyris indica* L. Flora 106; 393—432, Pl. VI, VII.
- WELLENSIEK, S. J. 1925a. — *Pisum crosses*. I. Genetica 7; 1—64.
- WELLENSIEK, S. J. 1925b. — Genetic monograph on *Pisum*. Bibliographia Genetica 2; 343—476.
- WENIGER, W. 1917. — Development of embryosac and embryo in *Euphorbia Preslii* and *E. splendens*. Bot. Gaz. 63; 266—81, Pl. XIV—XVI.
- WENT, F. A. F. C. 1910. — Untersuchungen über Podostemonaceen. Verh. K. Akad. Wetensch. Amsterdam. Sect. 11. 16; 1—88.
- WENT, F. A. F. C. 1926. — Untersuchungen über Podostemonaceen. Verh. K. Akad. Wetensch. Amsterdam. Afd. Natkd. 25; 1—59, 10 Pl.
- WENT, F. A. F. C. & A. H. BLAAUW. 1905. — A case of apogamy with *Dasyli-
rion acrotrichum* Zucc. Rec. trav. Bot. Neerl. 2; 228—34.
- WETTSTEIN, R. 1925. — Fakultative Parthenogenesis beim Hopfen (*Humulus lupulus*). Flora 119; 600—4.
- WETZEL, G. 1927. — Chromosomenzahlen bei den *Fagales*. Ber. Deu. Bot. Ges. 45; 251—2.
- WETZEL, G. 1928. — Chromosomenstudien bei den *Fagales*. Ber. Deu. Bot. Ges. 46; 212—4.
- WEXELSEN, H. 1928. — Chromosome numbers and morphology in *Trifolium*. Univ. Calif. Publ. Agr. Sc. 2; 355—76.
- WHITE, O. E. 1913. — The bearing of teratological development in *Nicotiana* on theories of heredity. Amer. Nat. 47; 206—28.
- WHITE, P. R. 1928. — Studies on the banana. An investigation of the floral morphology and cytology of certain types of the genus *Musa* L. Zeitschr. Zellforsch. Mikrosk. Anat. 7; 673—733.
- WIEGAND, K. M. 1899. — The development of the microsporangium and microspores in *Convallaria* and *Potamogeton*. Bot. Gaz. 28; 328—59, Pl. XXIV, XXV.
- WIEGAND, K. M. 1900. — The development of the embryosac in some monocotyledonous plants. Bot. Gaz. 30; 25—47, Pl. VI, VII.
- WINGE, O. 1914. — The pollination and fertilization processes in *Humulus lupulus* and *H. japonicus* Sieb. et Zucc. C. R. Trav. Labor. Carlsberg 11; 1—46, Pl. I, II.
- WINGE, O. 1917. — The chromosomes, their numbers and general importance. C. R. Trav. Labor. Carlsberg 13; 131—275, Pl. I.
- WINGE, O. 1919. — On the relation between number of chromosomes and number of types of *Lathyrus* especially. Genetics 8; 133—6, Pl. V.
- WINGE, O. 1923. — On sex chromosomes, sex determination and preponderance of females in some dioecious plants. C. R. Trav. Labor. Carlsberg 15; 1—25.
- WINGE, O. 1925. — Contributions to the knowledge of chromosome numbers in plants. La Cellule, Vol. Jubilaire V. Grégoire; 306—24.

- WINGE, O. 1926. — Das Problem der JORDAN-ROSEN'schen *Erophila* Kleinar-
ten. Cohns Beitr. Biol. Pflanz. 14; 313—34, Pl. VI.
- WINGE, O. 1927a. — Chromosome behavior in male and female individuals of
Vallisneria spiralis and *Najas marina*. Genetics 18; 99—107, Pl. VII, VIII.
- WINGE, O. 1927b. — Zytologische Untersuchungen über die Natur maligner
Tumoren. I. „Crown Gall“ der Zuckerrübe. Zeitschr. Zellforsch. Mikrosk.
Anat. 6; 397—423.
- WINKLER, H. 1906. — Botanische Untersuchungen aus Buitenzorg. II. Ann.
Jard. Bot. Buitenzorg 20; 208—76, Pl. XX—XXIII.
- WINKLER, H. 1910. — Über die Nachkommenschaft der *Solanum*-Propfbas-
tarde und die Chromosomenzahlen ihrer Keimzellen. Zeitschr. Bot. 2; 1—
38.
- WINKLER, H. 1916. — Über die experimentelle Erzeugung von Pflanzen mit
abweichenden Chromosomenzahlen. Zeitschr. Bot. 8; 417—531.
- WINKLER, H. 1921. — Über die Entstehung von genotypischer Verschieden-
heit innerhalb einer reimen Linie. Zeitschr. Indukt. Abst. Vererb. Lehre
27; 244—5.
- WINKLER, H. 1926. — Bausteine zu einer Monographie von *Ficaria*. Cohns
Beitr. Biol. Pflanz. 14; 335—58, Pl. VII.
- WINTON, D. DE. 1928. — Further linkage work in *Pisum sativum* and *Primula
sinensis*. Verh. V. Internat. Kongr. Vererb. Wiss. Berlin; 1594—1600.
- WIRZ, H. 1910. — Beiträge zur Entwicklungsgeschichte von *Sciaphila spec.*
und von *Epirrhizanthes elongata* Bl. Flora 101; 395—446, Pl. IV.
- WISSELINGH, C. VAN. 1899. — Über das Kerngerüst. Bot. Zeit. 57; 155—76.
- WOOLERY, R. 1915. — Meiotic divisions in the microspore-mother-cells of
Smilacina racemosa (L.) DESF. Ann. Bot. 29; 471—82, Pl. XXII.
- WOYCICKI, Z. 1911. — Die Endphasen der Pollen-entwicklung bei *Yucca re-
curva* SALISB. Sitz. Ber. Warschauer Ges. Wiss. 17—12. Bull. Acad. Sc.
Cracovie Cl. Sci. Math. et. Nat. Varsoviens 1; 1—19.
- WOYCICKI, Z. 1925. — Certain détail de la couronne équatoriale chez *Yucca
recurva* SALISB. Acta. Soc. Bot. Polon. 2; 1—7, Pl. VI.
- WOYCICKI, Z. 1927. — Grains de pollen, tubes polliniques et spermatogénèse
chez *Haemanthus Katharinae* BAK. II. Bull. Int. Acad. Pol. Scienc. et Let-
tres. Cl. Sc. Math. et Nat. Ser. B. 535—56, Pl. XI—XIV.
- WOYCICKI, Z. 1928. — Über die Zahl und Form der Chromosomen bei *Hae-
manthus Katharinae*. Bull. Int. Acad. Pol. Sc. et Let. Cl. Sc. Math. et Nat.
Ser. B; 611—29.
- WYLIE, R. 1904. — The morphology of *Elodea canadensis*. Bot. Gaz. 37; 1—22,
Pl. I—IV.
- YAMAHA, G. & Y. SINOTO. 1925. — On the behaviour of the nucleolus in the
somatic mitosis of higher plants with microchemical notes. Bot. Mag. To-
kyo 39; 205—219, Pl. I.
- YAMANOUCHI, S. 1901. — Einige Beobachtungen über die Centrosomen in den
Pollenmutterzellen von *Lilium longiflorum*. Beih. Bot. Centralb. 10; 301—4.
- YAMPOLSKY, C. 1925. — Die Chromosomen in der männlichen Pflanze von
Mercurialis annua. Ber. Deu. Bot. Ges. 43; 241—53, Pl. IX.

- YASUI, K. 1915. — Studies of *Diospyros Kaki*. I. Bot. Gaz. 60; 362—73, F XII, XIII.
- YASUI, K. 1927. — Further studies on genetics and cytology of artificially raised interspecific hybrids of *Papaver*. Bot. Mag. Tokyo 41; 235—61.
- YASUI, K. 1928. — Studies on *Pharbitis Nil* CHOIS. II. Chromosome number. Bot. Mag. Tokyo 42; 480—5.
- YORK, H. H. 1913. — The origin and development of the embryosac and embryo of *Dendrophthora opuntioides* and *D. gracile*. Bot. Gaz. 56; 89—11 Pl. V, VI; 200—16, Pl. VII.
- YOUNG, W. J. 1923. — The formation and degeneration of germ cells in the potato. Amer. Jour. Bot. 10; 325—35, Pl. XXV—XXVII.
- YOUNGMAN, W. 1927. — Studies in the cytology of the *Hibisceae*. Ann. Bot. 41; 755—78, Pl. XXXI—XXXIII.
- ZAITZEW, G. S. 1923. — A hybrid between Asiatic and American cotton plant *Gossypium herbaceum* L. and *Gossypium hirsutum* L. Bull. Appl. Bot. Plant Breed. 13; 117—134.
- ZHUKOVSKII, P. M. 1923. — Persian wheat-*Triticum persicum* Var. in Transcaucasia. (With English summary). Bull. Appl. Bot. Plant Breed. 13; 45—58, Pl. VIII 1 col. plate.
-